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cover story:

SCIENCES

Pneumatic concrete

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14 Special equipment for concrete work on dam

20 Prestressed lift slabs give speed to store job

CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

FEBRUARY 1961





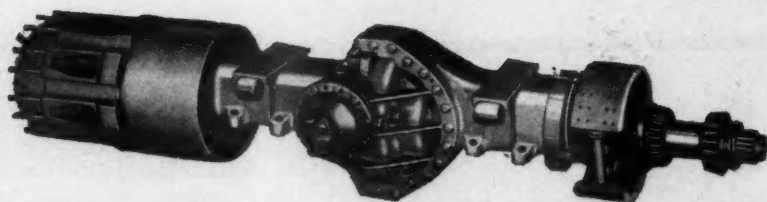
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...designed to make your tough jobs easier

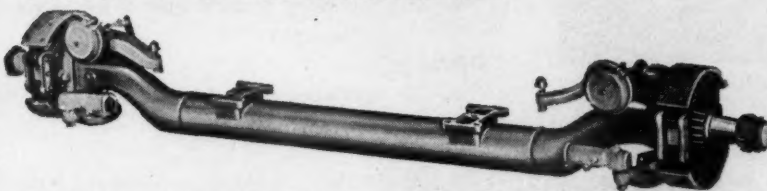
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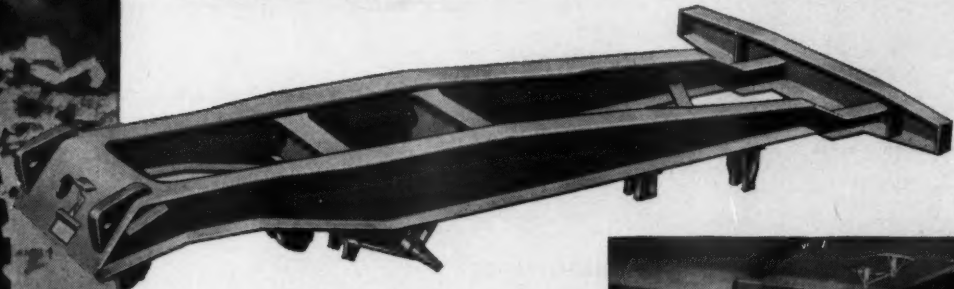
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Heaviest-duty Mack rear axle, combining hypoid carrier with Planidrive®, keeps M-30X hustling where others bog down. The new M-30X boasts one of the strongest, longest-lived rear axles of any four-wheel dumper in the field. Drive is through exclusive single-reduction hypoid Mack carrier, with planetary gears in wheel hubs. Suspension is by extra long, extra broad semi-elliptic progressive-rate leaf springs with cam-faced slipper ends and radius rods.

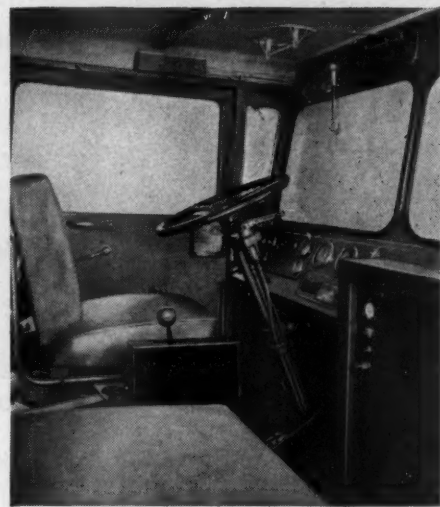


New tubular front axle withstands heavier loadings. Steel tubing, seven inches in diameter, with walls $\frac{3}{4}$ " thick is welded to cast ends to provide a reversed Elliott front axle that withstands the most punishing loads of quarrying, construction or mining. Extra wide tread gives maximum stability and short turning radius.



Five-crossmember, alloy steel frame shrugs off jarring drop loads of big shovels. Typical of Mack off-highway truck construction practices, the frame of the M-30X Model is extra solid, extra strong. I-beam main rails are tied together by five welded crossmembers to prevent stress concentrations.

New, massive functional cab for easier truck handling... extra driver comfort. The M-30X cab is not only rugged, but completely functional. Offset design provides maximum vision for quicker spotting and dumping and safer operation. Forward position permits heavier loading of new set-back front axle.



Meet the new Mack four-wheel dumper chassis that meets the most challenging, rigorous, heavy-duty jobs in mining, quarrying and construction—the M Model 30-Ton Dumper.

Visually, the silhouette of the new M-30X exhibits efficient, modern lines that are unmistakably Mack from the new, spacious and functional cab to a rear axle that is one of the sturdiest and most trouble-free of any four-wheel dumper in the field.

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make it even more maneuverable, rugged, dependable and safe.

Sure to be first choice among those who must haul huge tonnages profitably, the M Model is ready for your most critical appraisal. See your Mack branch or distributor for the full story of its capabilities. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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CONTRACTORS and ENGINEERS

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A Battenheim Publication

February

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COVER:

Concrete is handled by Airplace pneumatic equipment for water tanks at a treatment plant in Santa Cruz, Calif. The pipe carrying the mix goes through the wall forms, rises in the center of the tank, and is carried out to the forms on a truss supported by a wheel at its outer edge. The truss rotates 360 degrees as the wheel circles scaffolding built above the forms. Concrete is discharged through a tremie. Page 28

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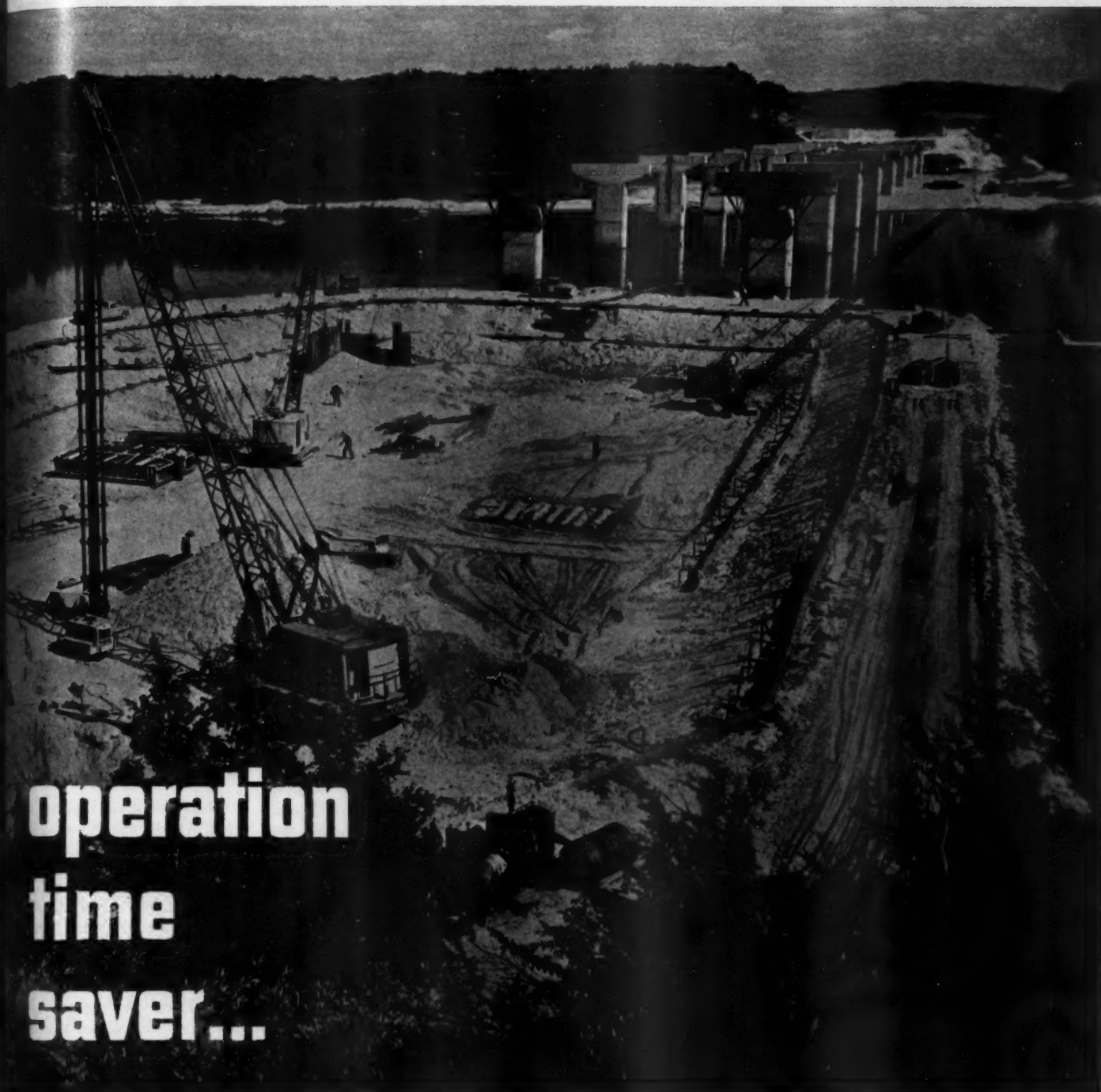
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operation time saver...

GRIFFIN Solves Another Dewatering Problem! To build 11 double piers for the Chicago-to-St. Paul Expressway Bridge over the fast-flowing Wisconsin River, contractor procedure called for constructing three earth cofferdams in the coarse sand, gravel and boulders of the river . . . Typical of construction speed was the progress made in only 10 weeks in the cofferdam shown above: • Construct cofferdam—2 weeks • Install Wellpoint system and dewater to grade—one week • Excavate, drive piles and pour concrete up to river level—7 weeks.

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Editorial

Helping the distributor

A letter came in the other day from a former contractor who, shortly after the end of World War II, decided to give up his business. He bought out a construction-machinery distributorship in a big western city, and now with one of the major tractor accounts he has, in addition to his headquarters, four branch offices throughout the state. On the surface he appears to be doing successfully, yet he writes:

"It has been a little rough out here both for contractors and us iron peddlers. When I quit contracting I

thought I was through with it, but now I find I am a partner with many contractors. Everyone is slow on payments and long on terms. There has been quite a bit of work in these parts, but there are so many who want to do it that the competition is real tough.

"When I first got into this business, there were a lot of cash deals and no paper—over one-third down and balance in 12 months, or one-fourth down and balance in 10 months. Now we take nothing down; 2-year paper; lease-purchase at six

or seven per cent per month; or sell to a finance company on 3 to 5-year paper. The construction industry has sure gotten itself into a hell of a fix. And the worst of it is that there is not much daylight in sight."

This contractor-turned-distributor is not cheered, apparently, by the estimated \$57.3 billion volume of new construction for 1961—a higher figure than the record \$56.2 billion spent for construction in 1959. Even if his contractor purchasers (maybe we should call them his partners) do get more work in '61, will the continuous squeeze on profits make them any better off than they were in 1960? If the contractor does not do better financially, neither will the equipment distributor. Conversely, if the distributor makes out all right, chances are that a favorable profit margin for contractors is responsible.

To prevent a further squeeze on profits, contractors must bid realistically for work. While the price of materials is expected to remain stable for the remainder of the year, the cost of labor should be weighed carefully with regard to productivity, availability, and the prevailing wage rate at the site. Engineers' estimates

are usually pretty close to the bottom price for work, and when contractors bid too far below that level they are courting trouble by maintaining a profit margin.

In that margin, too, the contractor must include an adequate allowance for the depreciation of his construction machinery and equipment. Because of taxes, such allowances have fallen short of the amount needed to finance the replacement of worn out or obsolete equipment. If the contractor does not take note of the need for such replacement, his competition—which does—may underbid him and then do the work with faster, more efficient, labor-saving machinery that are being developed.

Here is where government can help by increasing depreciation allowances through a more rapid write-off of new equipment. Such accelerated depreciation would encourage the contractor to get rid of any old-fashioned machines in his spread and replace them with modern equipment as it comes on the market. The creeping inflation that has plagued the economy since World War II, together with technological obsolescence, has antiquated our current

Surveying Washington..

By E. E. Halmos, Jr.



Opening day of Congress brought the usual flood of bills—more than 2,000 of them. Many will never again see the light of day, but among them were some hardy perennials of interest to contractors, and, taken together, they show some evidence of the course of the current session.

The first flood contains HR 8 and other bills for establishment of national policy for water-sources development; HR 10 and others to encour-

Corps" or a "Peace Corps" that would include some public-works projects; HR 135 to increase grants to communities under the Water Pollution Control Act; HR 152 to expand the saline-water-conversion program; HR 301 for establishment of a Department of Urban Affairs; and bills to repay states for roads taken into the Interstate System.

Bills aiding school construction (HR 243 and others) are numerous, but most of these can be discounted for the time being because they are aimed at special areas. Something approaching an omnibus school bill will come later.

One key bill not appearing is authorization for the President to reorganize federal departments. Previous reorganization authority expired more than a year and a half ago, and President Kennedy is sure to ask renewal. Congress' action on this will be a tipoff on how far it wants to go into any major shakeup of the government.

Furor over the Landis report on the regulatory agencies is of only remote concern to construction, with the exception of possible changes in the setup of the National Labor Rela-

tions Board. Many of the other agencies—such as Interstate Commerce Commission and Federal Power Commission—have a secondary (or even more remote) effect on construction through prices of shipment of materials, etc.

No change in NLRB seems to be in the cards for this session. But the Landis report might serve as a rallying point for many who don't like the present setup, in which the office of the NLRB's legal counsel is not subject to the orders of the board itself. This has been the cause of much fighting within the NLRB, as most construction men know.

Bypassing cabinet posts for Transportation and Urban Affairs is something the Kennedy administration would like to do, but there's some question as to whether Congress will permit this. This tipoff to the Administration's attitude is contained in the Landis report and other statements, which look to the appointment of a "coordinator" of transportation and other matters within the President's official family.

A massive report, however, urging complete shakeup of transportation supervision by the government, issued the Senate's Interstate Commerce Committee (after a 2-year study) certainly presages a legislative fight for establishment of a new department. Key proposals in the 900-page committee report center around these points: a cabinet-level department that would take over administration of transportation policies (including the Bureau of Public Roads, waterways functions of the U. S. Army Corps of Engineers, etc.) and a new regulatory agency that would con-

solidate ICC, the Civil Aeronautics Board, the Federal Aviation Agency and others. This is certain to start a fight, which the Administration would rather avoid this session in order to get other "must" items on a program through.

Appointment and reappointment of Rex Whitton and Floyd Dominy, respectively, spotlight the importance of so-called "second-echelon" jobs in government and seem to fit well with predictions of a continuation of such policies in highway and reclamation areas. Whitton, as Federal Highway Administrator, brings 40 years of engineering and construction experience to the job; Dominy, continuing as Bureau of Reclamation commissioner, has had two years of the job and 25 years of background experience.

A "no-strike" agreement on defense construction is a possibility if it can be accompanied by some sort of assurance of continuing employment for building-trades men. That's the implication in AFL-CIO's current study of World War II agreements as an answer to jurisdictional disputes. Behind the study is real fear that Congress will step in despite labor's strong showing in the elections.

Air-pollution work will have many appropriations, if Congress follows suggestions released by an advisory committee to the Surgeon General. The committee proposed tripling of \$32 million yearly expenditures on research into means of controlling such pollution. This is to be followed by other programs (which include some construction work) to achieve actual reduction. The biggest target is the automobile. Congress will be



age establishment of pension plans by the self-employed; HR 13 and others to boost the minimum wage to \$1.25 per hour; HR 27 to set up a 10-year program of construction grants for hospitals and public-health educational facilities; numerous bills to authorize specific reclamation and flood-control work in the West; HR 65 and others to set up a "Youth

preciation policies.

If a contractor could charge off the cost of a machine as expenses over a 5-year period, he would be better off, from the tax standpoint, than if that cost were spread out over a 10-year period. And he is better off, too, if he has a newer model of equipment to work with on the job, a machine that is more efficient and that will require less maintenance than an older one.

Some building contractors are overcoming the harsh facts of our current depreciation allowances by taking an equity in new office buildings they are constructing. They have become owner-builders because of the long-term capital gains that accrue if the property is held for at least three years before it is sold, and also because of allowances made for depreciation.

Consequently, whether a contractor is in the highway, heavy, or building fields, it behooves him to study his bids well and consider all financial factors thoroughly in his estimates. Then the distributor won't feel that he is getting paid off in paper instead of money for the equipment he is selling.

hearings this year into what devices are available to cut emission of harmful gases from vehicles and why these devices aren't in use.

Apportionment of highway money (\$3.125 billion for fiscal 1962) is looked to as a principal factor in boosting construction totals for the coming year and helping machinery purchases as well as contractors' businesses. The final share of \$231.3 million for the ABC system was divided up as one of the last acts of the outgoing administration. This money—part of the \$925 million ABC money okayed by Congress for fiscal 1962—was held up pending completion of census reports, for it is apportioned on a formula that includes population. Full apportionment includes some \$2 billion for interstate roads.

Joining the optimists as far as 1961 construction prospects are concerned is the Associated General Contractors of America, with a prediction of a volume of \$57.3 billion (plus \$19.5 billion for maintenance and repair). This is almost exactly in line with previous Department of Commerce guestimates. More maintenance and repair work, by the way, could be produced by a new bill (HR 454) that would permit home owners to deduct costs of maintenance and repair on their homes from income taxes.

Underwater launching pads in U. S. rivers and lakes are a definite possibility with the rapid development of the Air Force's solid-fueled Minuteman missile. The missile is already scheduled to be fired from railroad flatcars, but the Air Force's "Think Factory" (Research & Development Corp.) now suggests underwater or large launchings as being cheaper.

Harold S. Buttenheim dies

■ Harold Sinley Buttenheim, 84, one of the founders of what is now the Buttenheim Publishing Corp., died last month after a short illness. He is survived by two brothers and a sister. His brother, Edgar J., is chairman of the board of the Buttenheim Publishing Corp. A nephew, Donald V. Buttenheim, is president of the corporation.

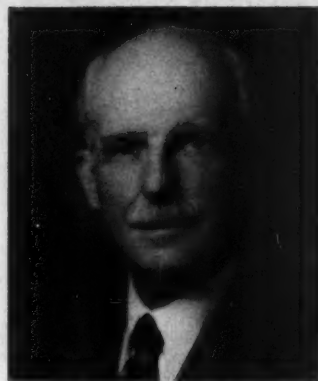
He began his publishing career with the Street Railway Publishing Co., which eventually became the McGraw-Hill Publishing Co., in which for the next 15 years he held positions of increasing importance.

In 1911, Harold and his brother, Edgar J., organized The Civic Press, which later became The American

City Magazine Corp. and is now the Buttenheim Publishing Corp. Two years later, again with Edgar, he founded the American City Bureau, Inc., a pioneer firm in the professional fund-raising field. From 1911 to 1955 he was editor of The American City magazine, and was editor emeritus from 1955 to the present.

He established a national reputation as a writer on the problems of municipal government, specializing in city and regional planning, zoning, municipal taxation, housing, and slum clearance.

During his lifetime, he was president or vice president of at least 50 civic enterprises. He was a member and co-founder of the Snag Club, which was dedicated to overcoming snags to building better cities.



Harold S. Buttenheim



NOW

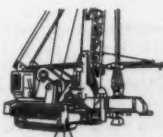
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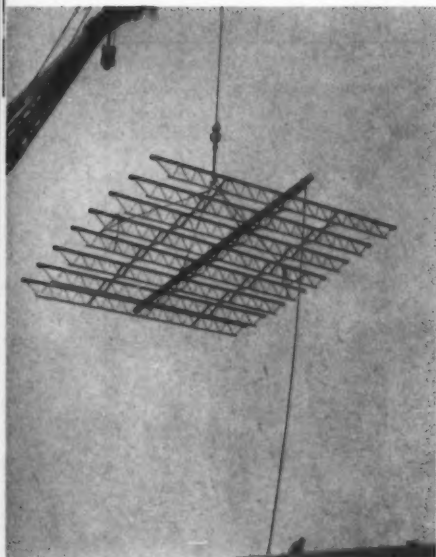
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Bar joists are ganged for erection



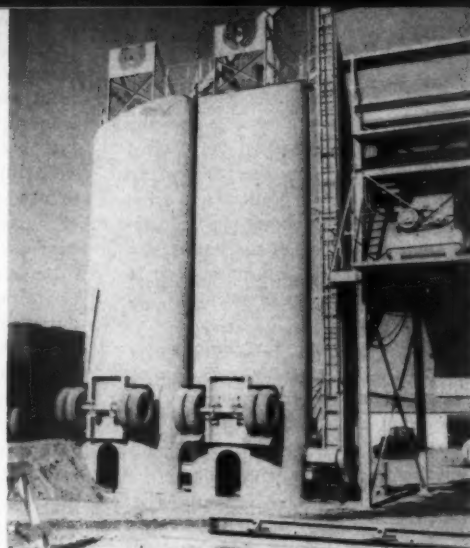
In framing a large building, time can be saved by assembling a group of bar joists on the ground and hoisting the package to the top of the frame.

The ganging of joists was a part of the erection procedure used by American Bridge while setting the steel on Chicago's mammoth Exposition Center. The steel enclosing the second floor of the 2-story building covers an area that is 1,130 feet long and 370 feet wide.

On the concrete deck of the second floor, men welded together a group of eight 30-foot-long bar joists. The welds were made at the three lines of X-bracing. The bracing—a permanent part of the structure—held the joists upright and at the proper spacing.

A 6-inch angle was used as bridging to lift the 30 x 30-foot section. The angle, running transverse to the joists, took most of the strain. The 1-ton section was erected by a traveling derrick making a 4-point lift. Two cables, attached to the angle, took most of the load. Two manila lines for balance were attached to the joists. Once the section was set in place, the angle was removed and the ends of the joists welded to the frame.

With crews using this system, much of the welding and spacing of the joists was done on the concrete floor. This allowed men to work with greater efficiency and safety.



Two big cement silos and a conveyor elevator move on their own wheels when the concrete batch plant of L. Houck Sons Corp. moves from one location to another. The fifth-wheel attachments to fit any standard truck-tractor are built right into these plant units; they need only be tipped down onto their wheels and set onto the tractors.

LUBE LOGIC

Five ways to

Now's the time for battery check-ups

With cold weather ahead, your batteries will soon work harder than ever. Here's how you can help make sure they're up to it:

Inspection

- Inspect battery case for cracks and leaks. See that vents in cell caps are open.
- Check battery posts and cable clamps for looseness, breakage or corrosion.
- Using distilled water, bring electrolyte in each cell up to level indicated in cell opening.

Hydrometer test for specific gravity

- Use a temperature-corrected hydrometer to test the state of battery charge. Make sure battery has not been recently fast-charged, nor water added.
- Draw enough fluid from each cell to raise float off the bottom of the hydrometer tube. Holding hydrometer straight up-and-down, take eye-level reading of the neck of the float. Repeat for each cell.
- Note the temperature, and correct hydrometer reading by subtracting 0.004 from the reading for each 10°F. below 80°F. (Example: If hydrometer reads 1.280, and temperature is 70°F., corrected reading would be 1.280 - 0.004 or 1.276.

Normal state of charge for 12-volt battery is 1.260 to 1.280 specific gravity. For a 6-volt battery, 1.265 to 1.290 specific gravity.



LEADING CONTRACTORS—EVERYWHERE—RELY ON TEXACO LUBRICANTS



Isbell Construction Company bulldozers remove reefs from river channel on Truckee River Flood Control project near Sparks, Nev. Isbell heartily endorses Texaco's Simplified Lubrication Plan.



Interstate Highway 80 Project at Colfax, Iowa. Texaco Engineer E. A. Rolwes (right) works closely with Matt Construction Company on the important assignment of keeping equipment on the job and maintenance costs low.



Ledbetter-Johnson gouges out largest road (306 ft.) east of Rockies in highway project at Dalton, Ga. This company uses Texaco lubricants to keep their equipment on the job ... shuttling down.

Batch plant

Ready for quick move

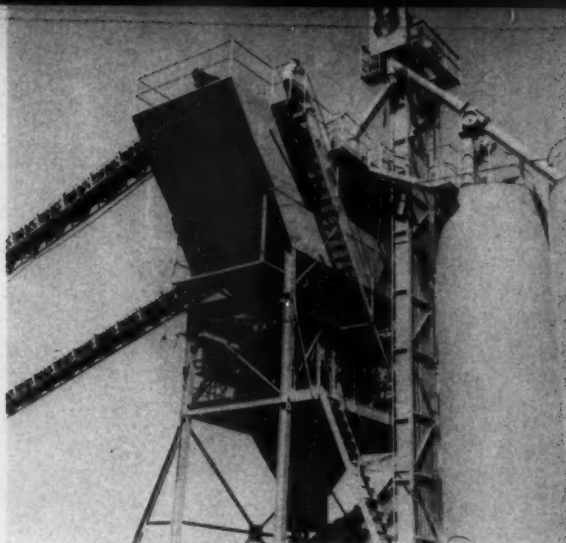
The C. S. Johnson batch plant that proportions the mixes for Houck's concrete paving spread includes two 660-barrel cement silos and a 60-foot-tall cement elevator.

Both of the silos have trailer dollies attached to one side near the bottom. The framework that carries the fifth-wheel attachment is built up on top of the silos. At moving time, the

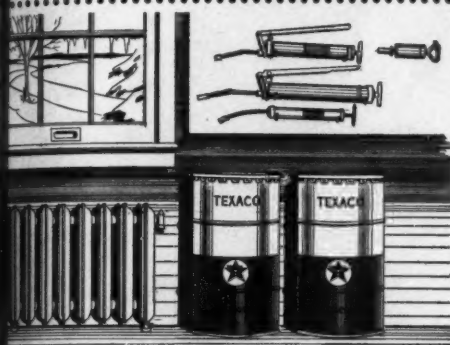
horizontal screw conveyor underneath is disconnected, the chutes at the top are removed, and a motor crane tips silos onto their wheels.

The tall elevator has a fifth-wheel attachment at the upper end. To prepare it for moving, the crane lays the elevator down on a trailer dolly with the fifth wheel on a tractor.

Among the other units Houck has



s tease winter maintenance



Grease guns like it warm

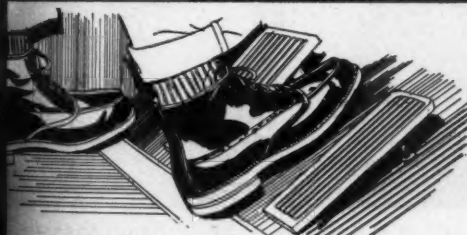
Grease guns this way, properly racked to avoid damage, and they'll give you much better service. Incidentally, lubricants like to be stored warm, too.

Warm up the guns if they're too cold to pump the lubricant. Best way is to bring them into a warm place far enough in advance of use. Don't ever attempt to warm them up by direct application of heat.



Save the engine— not the anti-freeze

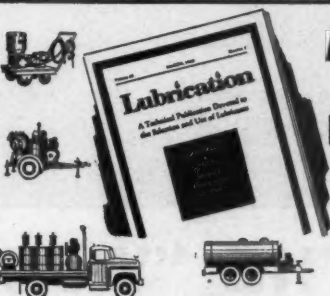
Go slow on using last year's anti-freeze. Although it might still give good protection against freezing, chances are those chemical additives that protect the cooling systems of your engines against rust and corrosion have lost their punch. Your best bet, after draining and thoroughly flushing the radiators, is to fill them up with fresh new anti-freeze — such as Texaco P-T Anti-Freeze.



Easy does it"... after an oil change

When an engine's crankcase is drained — so is the oil pump's intake sump and pipe. And when the engine starts, the oil pump must first suck up a lot of air before it starts moving oil.

To avoid possible damage to the engine, idle it first at low speed. The oil pressure should begin picking up in a matter of seconds and reach normal readings within several minutes. Wait until it does — before you start working on the engine.



All about mobile lube rigs

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- How to use lube records to make rigs more valuable
- Special purpose lube rigs
- Pros and cons of mobile and centralized lubrication

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modified for quick moving are the toilets. These have their own wheels and tongues attached. They can be tipped up on their wheels and towed by any truck or pickup to the new location.



Modify paver for no slippage on fabric

One of the newest paver modifications made specially for a reinforced asphaltic-concrete road job is designed to prevent paver tracks from slipping over welded-wire fabric when there is an acceleration in the paver's speed. On a job on U. S. 44 east of Poughkeepsie, N. Y., Callanan Road Improvement Co., South Bethlehem, N. Y., used a Cedarapids gasoline-powered paver. A sled was used under the paver and between the tracks to flatten down the wire fabric and keep it from becoming entangled in the conveyor screw. But because the speed of the tracks could be preselected from 11 to 189 fpm, with the paver moving to the selected speed when the operator flicked a switch, there was a chance that an abrupt rise in speed might cause the tracks to slip over the reinforcing. Superintendent George Williams overcame the problem by designing and building into the rig a "gasoline decelerator." This is simply a spring-tensioned pedal-controlled throttle in the gas line. When pressed down by the operator, it decelerates the engine to idling speed. When the operator starts up, he throws the micro-switch to engage the clutch, then eases his foot off the decelerator so that the tracks gradually attain the preselected speed.



Autocar

"World's Finest"

FRAME FOR THE "World's Finest"

A truck cannot possibly be better than its frame. This is Autocar's philosophy, and we build the truck frame accordingly.

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fore blueprints are drawn and custom-building begins.

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New forming method for retaining walls

by BILL ALLEN, field editor



There's a new, adaptable method of forming that has many advantages. It is particularly useful for building retaining walls of constantly changing dimensions. It is also suitable for forming bridge piers and abutments.

The main advantage of the system is its flexibility. The plywood and 2 x 4 components of the form go up fast for a wall of one particular height and batter. After being stripped and disassembled, the members go up just as fast for a wall of a different height and batter.

Since the forms are built in place, no cranes are necessary for forming or stripping. The heaviest member that men handle is a 4 x 8-foot piece of plywood.

The forms are lightweight but surprisingly strong. Use is made of the strength of the plywood, and the forms are braced only by vertical wales. There are no studs. In spite of their light weight, the forms can easily take 8 feet of concrete per hour.

Snap ties are used on the system. These are inexpensive, and the holes they leave in the surface of the concrete require little plugging.

Since there's little nailing of the plywood—it is done only at the corners—the forms can be used over and over again. With few nails to be pulled out, the forms are easily disassembled.

The ingenious method was recently put to the test by Fruin-Colnon Contracting Co., St. Louis, while it was working on a series of expressway contracts in East St. Louis, Ill. As part of Interstate 70, the split expressway in this section approaches two existing bridges over the Mississippi River. A new river bridge to tie in with the expressway is in the planning stages.

The expressway construction is being supervised by the Illinois Division of Highways. Its resident engineer is Harold Ruffner. For Fruin-Colnon, John Berra is project manager, Walter Shourd is project engineer, Floyd Emert is concrete superintendent, and Charles Kuergels is superintendent in charge of pile driving, excavation, and steelwork.

Fruin-Colnon claims no credit for originating the forming system. Its men learned the system from S & W Construction Co., Memphis, while working on a joint venture in Tennessee. Some modifications and improvements were made to adapt the system to this project.

On the expressway work, Fruin-Colnon was faced with a type of construction that was particularly suited to the new forming method. On one of its five contracts, there was a total of 4,000 feet of retaining wall varying in height from 5 to 25 feet. From a 1-foot width at the top, the back of the wall dropped down on a batter while the front was plumb. Four different batters complicated the forming. In many places, the walls were on curves.

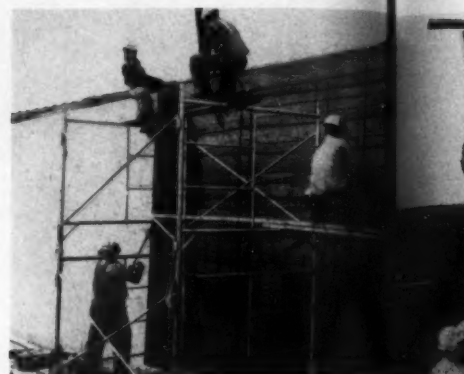
The detailed story of how the walls were formed can best be seen from the pictures. The men didn't waste any time. For example, three men took two days to form and set steel on a 13-foot-high 25-foot-long section of the retaining wall.

Since this was the first time that Fruin-Colnon tried the system, it also experimented with it on forming wall-like bridge abutments and battered rectangular piers. Using essentially the same method as on the retaining walls, the company was well satisfied with the results.

Here's how the camera saw the story . . .



Men position the 4 x 8-foot sheets of $\frac{3}{4}$ -inch plywood parallel with the top of the wall. A wedge-shaped piece at the base takes care of the batter height. The plywood is nailed, at the corners, to the vertical 2 x 4's that rise from a 2 x 4 plate nailed to the concrete footings.



With the back form in place, ironworkers tie the forcing steel to the dowel bars rising from the footing. The two carpenters at the top of the form are nailing a 2 x 4 sill to the top of the vertical wales.



The day after concrete has been placed, the forms are tilted back on the ground and disassembled. Since very little nailing is done, they are easily taken apart. They are then cleaned and made ready for the next wall section.





of 3/4-inch vertical double wales are nailed at the base of the wall. A spacer plate, they are not nailed to the plywood. They are made up to the approximate height of the wall. Each double wall consists of two 2 X 4's separated by 5-inch spacer blocks on about 4-foot centers. A belt makes the connection through each block.



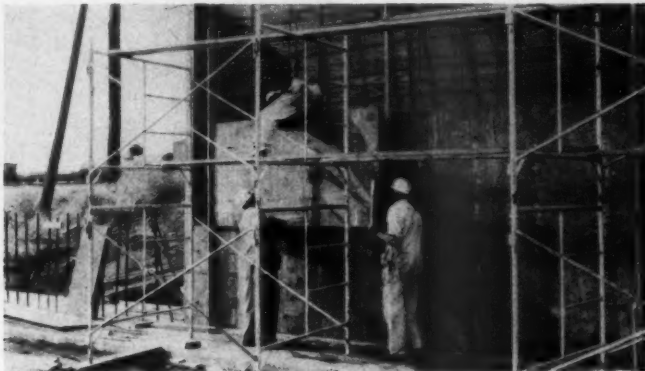
The strength of the form lies primarily in the backing of the vertical double wales. These replace conventional studs. The wales are spaced on 2-foot centers. Here, the contractor's crew is erecting the lightweight but strong formwork for a bridge abutment.



A carpenter nails horizontal 1 X 4's to the vertical wales. These double horizontal members serve only to hold the snap-tie wedges. They add practically no strength to the form. Set on 2-foot centers both ways, the snap ties are inserted through predrilled holes. Each vertical double wale straddles a line of holes.



ers tie the horizontal steel through holes in the wood bulkhead form. A split rubber waterstop has been nailed to the inside of the form.



With the bulkheads in place, carpenters set up the closing wall in the same way they set up the first wall. As they position these 4 X 8 sheets of plywood, they must thread the ends of the snap ties through the pre-drilled holes in the plywood. No bracing is needed on this side.



are tilted little nail are then Walls are cured by covering them with wet burlap for seven days. Burlene, a plastic-covered burlap made by Max Katz Bag Co., Indianapolis, Ind., holds moisture many days without being rewet.



This air-powered tool saves hand labor in cleaning exposed wall surfaces. Made by the Chicago Pneumatic Tool Co., it is a slowly rotating carborundum stone.

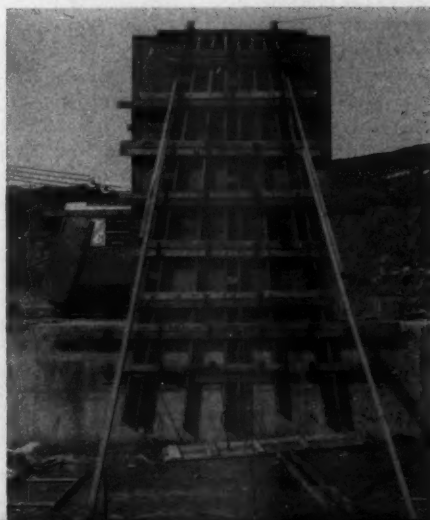


Men work from Universal galvanized scaffolding to rub down the completed wall. Spex require two rubdowns. Frin-Colnon uses the machine tool for the first, a standard hand method for the second.



◀ Using the new forming method, carpenters form up the walls for a bridge abutment. They fabricate the double vertical wales that will back up the plywood forms. Forming for the wall in shadow is practically complete. Forming for the adjacent wall is just getting started. The curving retaining wall in the background was also formed by this method.

This forming method is also adaptable to building battered bridge piers. The double wales slant inward here to conform to the shape of the pier. THE END





A Washington revolving gantry picks a Gar-Bro 4-yard bucket off a special trailer and swings it to one of the low blocks in the Wanapum Dam project on the Columbia River near Vantage, Wash. A Manitowoc 4500, background, is handling the same type of bucket. One of the batteries of pumps that keep the cofferdam dewatered is to the right of the Washington gantry.

Big gantries handling unusual buckets, small machines moving steel forms, plus haul rigs and bucket hooks are among

by RALPH MONSON, field editor

Special equipment for concrete work on dam

With some special machines in use, the placement of the million-plus cubic yards of concrete in the \$93 million Wanapum Hydroelectric Development on the Columbia River near Vantage, Wash., is progressing on schedule. Big gantry cranes use automatic hooks to handle the concrete buckets, which are hauled from the mixing plant on specially built job-designed tractor-trailer rigs.

Working in close cooperation with the big gantry cranes are two little 6-ton Roustabout cranes that raise the steel forms from one lift to another as the concrete is placed.

Wanapum, the sister project to the Priest Rapids unit, is being built for the Grant County Public Utility District by a joint-venture contractor called Grant County Constructors. Sponsored by Morrison-Knudsen Co., Inc., Boise, Idaho, the combine also

includes Henry J. Kaiser Co., Oakland, Calif.; Macco Corp., Paramount, Calif.; Raymond International, Inc., New York City; and F & S Contracting Co., Butte, Mont.

Designed by Harza Engineering Co., Chicago, Wanapum Dam will be a modified Z-shaped reinforced-concrete and earth-fill structure with a total length of 8,320 feet. The 1,540-foot powerhouse section will contain ten generating units with a total nameplate rating of 831,250 kw under a head of 80 feet. Space is being provided for the installation of six future generating units.

The spillway section is 820 feet long. It will contain 12 tainter gates, each 50 feet wide and 65 feet high. Earth dikes will extend from the ends of the concrete structure across the river valley to solid abutments on either side.

Construction got under way on the project in the summer of 1959 with the building of some of the earth-fill embankments and the cofferdam for the intake structure. With approximately five years allowed for construction, the job is scheduled for completion in the fall of 1964.

The cutoff trenches under the earth embankments and under the cofferdams were excavated, and then backfilled by use of a bentonite clay slurry that permitted draglines to excavate narrow straight-walled trenches as deep as 80 feet without the use of sheeting. The bentonite prevents sloughing of the gravel walls of the excavation and also seals out the water. This method was specified for the earth embankments, but the contractor also chose to use it to seal off the porous gravel under the cofferdams.

Among the many large machines on the job is one real giant, a Bucyrus-Erie 480-W Monighan walking dragline. Using 17 and 20-yard dragline buckets, this rig handled a substantial part of the excavation within the big cofferdam. Some of this excavated material went into the right-bank dike, and some of it was hauled to a nearby plant to be processed into the concrete aggregates for the job.

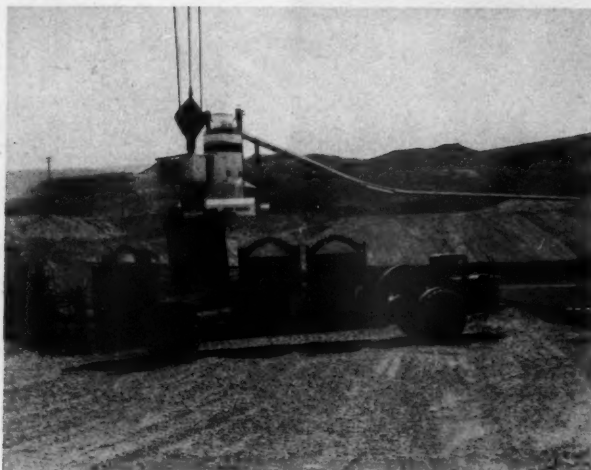
When the excavation had been carried down into the underlying rock, concrete placement for the spillway structure began. The blocks of the structure are being built in 5-foot lifts with Blaw-Knox and Dixie steel forms.

While big machines play important roles in the project, a pair of small rigs have a vital function in the economical handling of the heavy

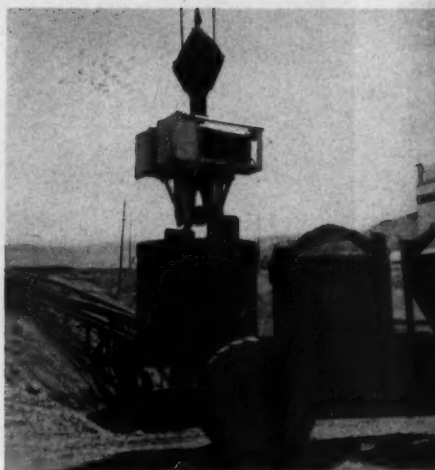
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A Manitowoc 4500 picks up a bucket from a special trailer pulled by a Euclid S-12 tractor and swings it to one of the lifts. The Manitowocs take care of the few areas outside reach of the gantries.



The trailer, designed by the contractor and fabricated by E. T. Pybus, Wenatchee, Wash., carries three Gar-Bro 4-yard buckets and has space for an empty. These rigs proved faster and more maneuverable than truck-trailers.

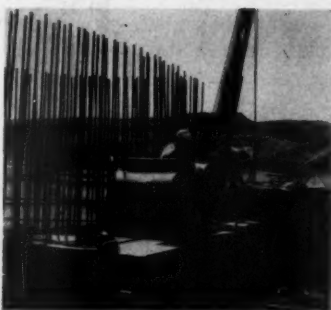


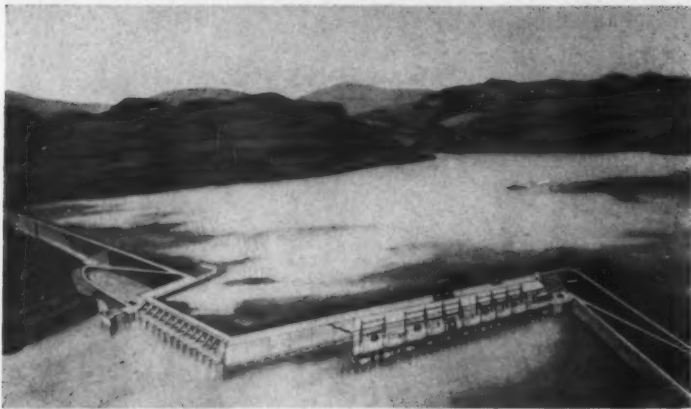
The automatic bucket hook is operated by compressed gas contained in the tanks at the top of the hook. The hook is controlled entirely by the crane operator.

Workmen dump concrete inside the forms of a low block. Consolidation is handled with one and two-man vibrators. Air and water are used to green-cut the surface to provide a good bond with the succeeding lift.



Small rigs with important work to do on the project are Hughes-Keenan 6-ton Roustabout cranes, which enable one workman, a crane operator, and a foreman to reset the steel forms for the 5-foot lifts. The hard rubber tires will not damage the new concrete, and they do not puncture if they run over a stub of reinforcing steel. In the photo below, a Roustabout has been picked up by a Washington gantry and is being transferred to a new block. The boom of another Roustabout can be seen sticking up from the reinforcing on one of the blocks.





An artist's conception of the completed Wanapum development. From left to right are the west earth embankment with U-shaped access road, west-bank fish facilities, 820-foot-long spillway with twelve 50-foot-wide and 65-foot-high tainter gates, the 1,540-foot-long powerhouse, east-bank fish facilities, and east earth embankment. Total length of the dam is 8,320 feet.



A Gardner-Denver Air Trac drills holes for rock excavation in the future powerhouse area. In the background are two new Washington revolving cranes on 85-foot gantries that serve the dam site.



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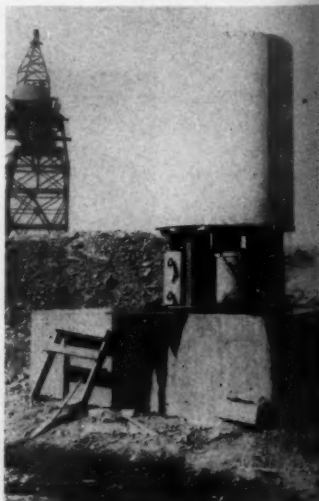
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steel forms. These are two Hughes-Keenan Roustabout cranes. The little rigs, with a rated lifting capacity of 6 tons, strip, raise, and reset the forms for each pour.

Cranes handle rigs

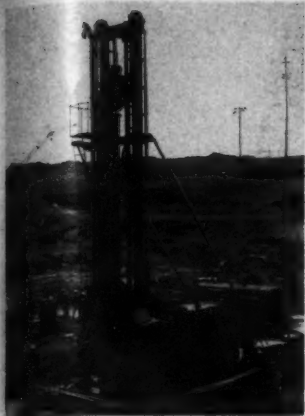
The day after concrete is placed, one of the big Washington revolving gantry cranes picks up one of the Roustabouts and sets it in on the block. One workman, the crane operator, and a foreman, using the little crane, quickly strip and reset the forms for the next 5-foot lift. As soon as they have finished, the gantry crane sets the Roustabout on another block, and the operation is repeated.

The Roustabouts are fitted with solid rubber tires. These keep the new concrete from being damaged, yet they do not puncture if they run over a projecting steel dowel. M-K used a similar operation at Noxon Rapids Dam in Montana with a small crawler crane. There was some difficulty, however, in preventing damage to the



The future intake units of the structure are relatively light sections that are being tied down into rock with prestressed anchors. In each of these intake units 13 holes, each 17½ inches in diameter, are drilled 70 feet into the rock. Four clusters of 90 wires each are anchored into the hole with a 20-foot plug of concrete. Wires are then stressed to 0.7 of their ultimate strength, and the remainder of the hole is grouted. Wires extend up into the intake lip and the piers. Shown is the jacking unit used to prestress and test the test cluster.

CONTRACTORS AND ENGINEERS



This huge Robbins rotary drill puts down holes for the prestressed anchor piles for the future powerhouse bays. Built on a Cat D9, it digs the 17½-inch holes to a depth of 70 feet.

green concrete. The rubber tires of the Roustabout seemed to solve this problem.

Special rigs haul buckets

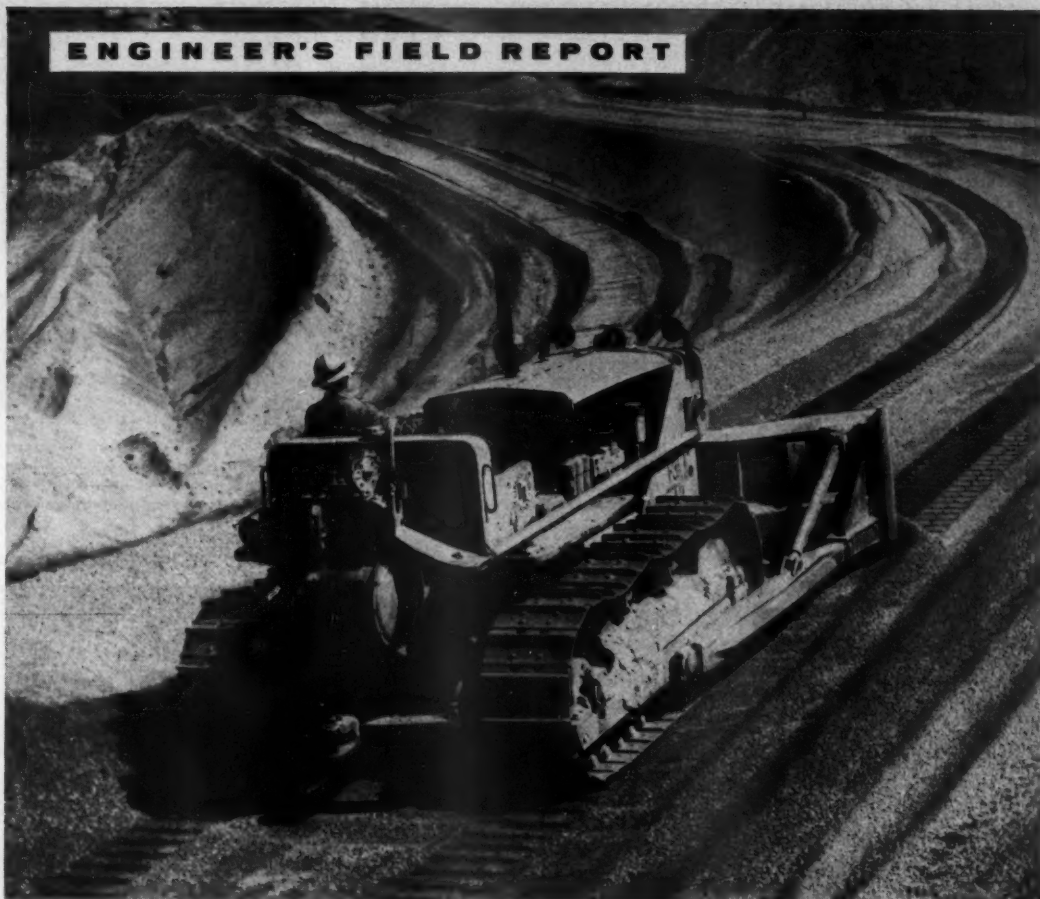
The concrete for the structure is being mixed in a C. S. Johnson plant. The seven compartments of the plant storage section carry 750 cubic yards of aggregates in five sizes, ranging from sand to 6-inch rock, plus cement and pozzolana. Batches are weighed, discharged to the four 4-yard Koehring mixers, and dumped into the 2-compartment wet-batch hopper by means of automatic push-button controls.

The wet-batch hoppers discharge into Gar-Bro 4-yard buckets carried on tractor-trailer rigs that were designed and built especially for this job. To gain increased mobility, the contractor replaced the customary truck-trailer haul rigs with these special trailers pulled by Euclid S-12 two-wheel tractors. The trailers, fabricated by E. T. Pybus, Wenatchee, Wash., have spaces for four buckets. They customarily carry three loaded buckets from the plant, leaving room to receive an empty bucket from the crane. These rigs have proved to be fast and trouble-free. Their primary advantages are getting into and out of tight spots and operating through areas where conventional trucks would probably bog down.

Automatic hooks handle buckets

The concrete buckets are picked from the trailers and swung to the forms by four gantry cranes that cover most of the job area. These are Washington revolving cranes rated at 50 tons and fitted with 150-foot booms. Two of them are on 60-foot gantries, and the other two are on 40-foot gantries. The gantry cranes are supplemented by a Manitowoc 4800 crawler crane that handles placement outside the reach of the gantries or fills in when they are too busy.

For handling the concrete buckets, these cranes use Gar-Bro automatic bucket hooks. These gas-operated hooks enable the crane operator to pick the full buckets off the trailer and set the empties back on without the help of a workman on the trailer. In addition to the saving in labor,



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this eliminates one of the most hazardous jobs in this type of operation.

Workmen dump the buckets by actuating the air-operated gates. The mix is consolidated with one and two-man vibrators. When the concrete has its initial set, the surface is green-cut with air and water to provide good bond with the next lift.

The concrete aggregates are produced on the site by a subcontractor, J. G. Shotwell, Seattle. The raw material comes from the excavation of the approach channel and from nearby pits. The crushed and washed gravel is delivered to the stockpiles over the recovery tunnel at the concrete plant; it is fed by conveyor to the plant bins.

A 6-bay section for additional generators is being roughed in, but not

completed. The design for this section provides a light intake section anchored securely into the underlying rock with prestressed anchors.

For these anchors, a Robbins rotary drill mounted on a Cat D9 tractor drills a 17½-inch hole to a depth of about 70 feet. In each of these holes, four clusters of 90 high-tensile ¼-inch wires each, are encased in a 20-foot plug of concrete that serves as the pretensioning anchor. Using four Star Hydraulics 500-ton jacks, these wires are stressed to 0.7 of their ultimate strength. The remainder of the hole is then grouted full.

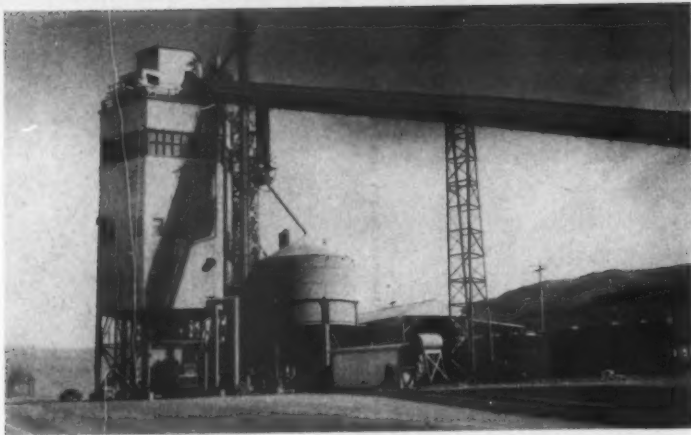
Of the 13 anchors in each intake bay, the wires from nine extend up to the intake lip and the wires from the other four continue on up into

the piers. This prestressing is being done by the BDRU system that was developed in Switzerland.

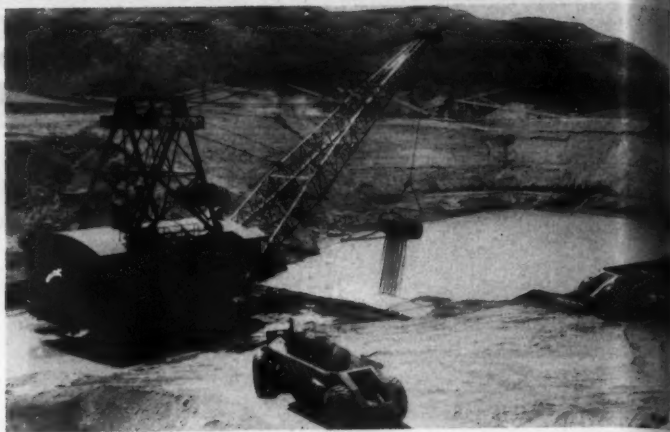
Equipment list

In addition to the four Washington revolving cranes, two Manitowoc 4500's, the Bucyrus-Erie Monighan, and other equipment previously noted, the general contractor is using a Bucyrus-Erie 71-B power shovel, a Northwest 80-D power shovel, a P&H 155A backhoe, a P&H 775 truck crane (70 to 80-ton), a number of smaller truck cranes, five Ingersoll-Rand XLE compressors powered by 200-hp electric motors, Gardner-Denver Air Trac drills, and numerous other machines.

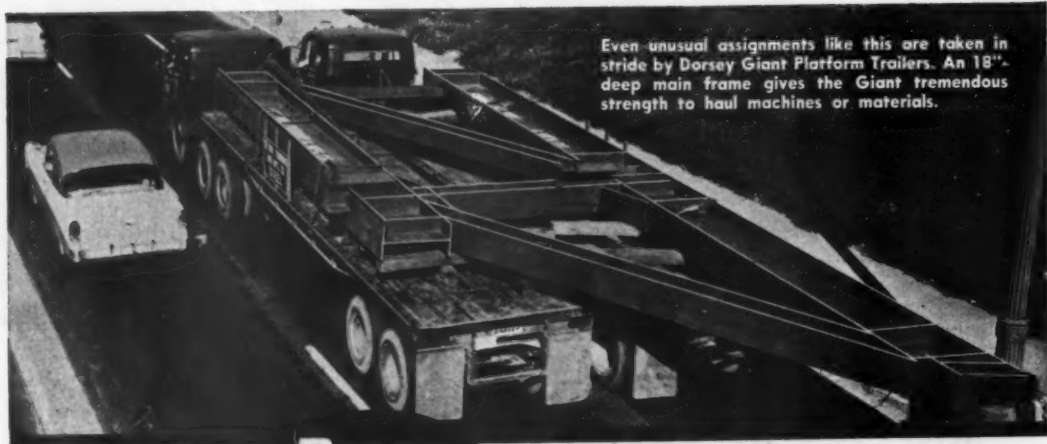
The contractor constructed a 2½-mile railroad spur connecting with



Concrete mix for the job is being turned out by this big new C. S. Johnson plant, which has seven compartments for five sizes of aggregate, cement, and pozzolana. Material is dumped to four Koehring 4-yard mixers and a 2-compartment wet-batch hopper by automatic controls.



A big part of the excavation job is handled by this huge Bucyrus-Erie Monaghan 480-W, which is using a 17-yard Esco bucket to load 30-yard bottom-dump Euclids. Two buckets fill the "Euclids" with wet gravel excavated from below water level.



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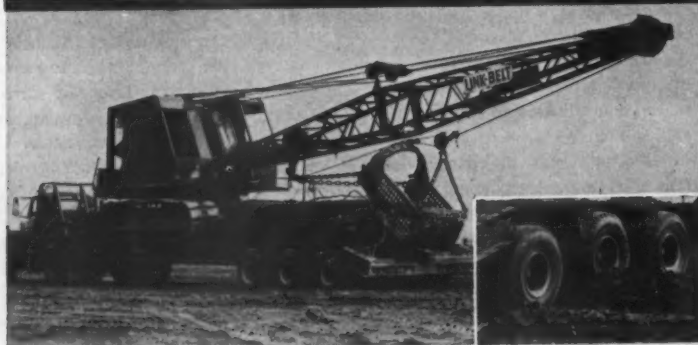
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(Continued from preceding page)

the Milwaukee railroad and operating a diesel locomotive to serve the job site. Among the major items handled on the railroad are the cement, pozzolana, and 68 million pounds of reinforcing steel.

Personnel

The supervisory staff for the contractor on this job is headed by project manager George "Pete" Piedmont. Serving with him are general superintendent Lee True, project engineer Chuck Peters, office manager William H. Smith, safety engineer Jack Donovan, field engineer Herb Curtis, and office engineer Merwin Acker. Superintendents of the principal phases of the work are Jim Napper, William Haggerty, and William McGee.

The Harza Engineering Co. staff on the project supervision includes resident engineer R. B. Jackson, assistant resident engineer B. A. Hall, office engineer W. L. Seearce, and field engineer D. M. Kime.

The manager of the Public Utility District of Grant County is E. B. Gibbons. President of the PUD is William Schempp. R. R. Ries is supervisor of production for the PUD on the Priest Rapids project, which includes both dams.

The power generated at Wanapan, like that at Priest Rapids, is integrated with the Northwest Power Pool and distributed to various private and public utilities in Washington and Oregon.

THE EN

New book discusses construction and the law

"It's the Law!" is a 435-page book designed to inform the reader about the legal problems of private and public construction.

Bernard Thomson, the author, analyzes standard form agreements in the light of actual court decisions and suggests new and improved clauses to reduce legal risks. A special section of sample standard forms is included.

The book is available from the Channel Press, 159 Northern Blvd., Great Neck 11, N. Y. The price of the book is \$7.50.

CONTRACTORS AND ENGINEERS

Contractors expect gain in 1961

Work volume will pick up in the heavy-construction business in 1961. At least, that is the thinking of a majority of 203 contractors reporting on their expectations for the year ahead to C&E.

Depending on the segment of the industry, roughly from a quarter to a third of the contractors expect the improvement over 1960 business volume to exceed 10 per cent. Five to 15 per cent think the 1961 gain will be more than 20 per cent.

The heavy-construction industry includes contractors who build highways, bridges, dams, pipelines, and heavy buildings—apartments, office structures, and plants. In addition, certain construction specialties—chief among them earthmoving, excavating, and steel erection—are integral parts of the industry. It does not include private home building and light commercial work.

These are the results of the survey by segments of industry:

Almost half of 78 highway contractors among those who replied think their 1961 volume will be up. Thirty-five per cent expect it to improve more than 10 per cent over 1960. Just under one-fourth (23 per cent) expect business to be the same, and 29 per cent anticipate a decline. A substantial 14 per cent expect the drop in volume to exceed 20 per cent.

Of 48 bridge contractors responding, 51 per cent expect more work in 1961, and 31 per cent see no change. Eighteen per cent foresee a downturn.

Earthwork projects will increase in 1961, according to 44 per cent of the contractors who reported doing this work last year. Thirty-nine per cent see no change just ahead, and 17 per cent expect a change for the worse.

Fifty-six pipeline contractors split this way: 41 per cent say business will increase next year; 31 per cent think it will be the same; and 28 per cent see a decline in the amount of this type of work.

In the building field, apartment buildings are apparently still an expanding market, according to building contractors. More than half (52 per cent) of the 45 contractors reporting on this work expect to do more business next year. Most of these think their volume will be at least 10 per cent higher throughout the current year.

Over 42 per cent of 114 contractors in commercial building say they can see gains in business volume for next year. Thirty per cent think the gains will exceed 10 per cent.

Of 103 contractors reporting on industrial building projects, 38 per cent foresee increases in work volume, and 28 per cent expect no change. Over one-third predict a decline, with almost 11 per cent thinking it will exceed 20 per cent.

These results are based on tabulations of questionnaires returned by construction contractors through mid-December.

REPLIES OF 203 CONSTRUCTION CONTRACTORS TO QUESTION:

"HOW DO YOU EXPECT YOUR 1961 BUSINESS VOLUME TO COMPARE WITH 1960?"

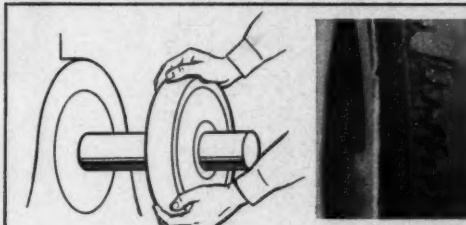
	Number of contractors reporting	Up more than 20%	Up 10-20%	Up less than 10%	Same as 1960	Down less than 10%	Down 10-20%	Down more than 20%
HIGHWAYS, ROADS, AND STREETS	78=100%	8%	27%	13%	23%	11%	4%	14%
BRIDGES	48=100%	15%	23%	13%	31%	4%	6%	8%
EARTHWORK, DAMS, WATERWAYS	54=100%	9%	20%	15%	39%	6%	4%	7%
PIPELINES: SEWER, WATER, GAS	56=100%	11%	12%	18%	31%	5%	12%	11%
APARTMENT BUILDINGS	45=100%	7%	38%	7%	26%	7%	11%	4%
COMMERCIAL BUILDINGS	114=100%	5%	25%	12%	32%	10%	11%	5%
INDUSTRIAL BUILDINGS	103=100%	5%	20%	13%	28%	14%	9%	11%



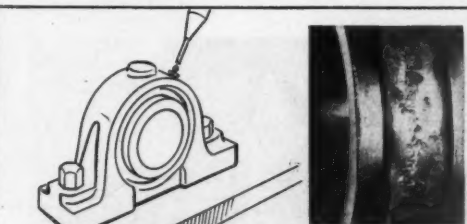
DISTRIBUTOR DAN, the SKF bearing man, lists **THE 5 MAIN REASONS WHY BEARINGS FAIL** and some helpful tips to eliminate them



ABUSE DURING MOUNTING. Don't hammer the outer ring of a bearing having an interference fit on the inner ring. Striking the outer ring with a hammer almost always causes denting, brinelling, and even breakage—as shown in the photo at right.



IMPROPER MOUNTING can cause edge-loading and fatigue-flaking, especially in tapered and cylindrical roller bearings. Watch out for off-square mounting or cocking of the inner or outer ring, out-of-line housings or shaft deflection—all of which mean misalignment.



INADEQUATE LUBRICATION results in breakdown of the lubricant by carbonization into a fine abrasive. Heat generated softens the bearing steel and early failure results. So, be sure to give your bearings the right amount of lubricant in the right place at the right time.



DIRT AND OTHER PARTICLES will often cause denting, as shown at right. Even soft particles—brass, aluminum, wood and paper—can dent a rolling surface. Protect your bearings by using effective seals and maintaining cleanliness at all times.



CORROSION CAN START if you wash the bearing in cold solvent and then cover it with a cold slushing compound. The moisture can't evaporate so it expands itself in corroding the steel. To prevent this, immerse the bearing in hot oil or slushing compound and allow it to assume the temperature of the bath.

Baffled by a bearing problem? Whether it's selection, mounting, or maintenance—consult your Authorized SKF Distributor. He's staffed to help you keep them running smoothly and he stocks all the bearing types and sizes you need.

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Prestressed lift slabs give pe

Congestion problem is solved and time is saved when slabs are lifted in 2-phase 17-day operation

Contractors and Engineers staff article

Holsted as though by its own bootstraps, a furniture-store building in Reno, Nev., rose from two piles of concrete slabs to a 6-story structure in the short space of 17 days. It was northern Nevada's first lift-slab job and the state's highest. To make it even more spectacular, the thin 7 and 8-inch concrete roof and floor slabs were all prestressed.

The 130 x 80-foot structure is the new home of Reno's Home Furniture Co. It was built by the Reno firm of Brunzell Construction Co., Inc., of Nevada, with the post-tensioning and lifting operations handled by Western Concrete Structures Co., Inc., Gardena, Calif.

Limited working area at the job site made lift-slab construction an obvious choice. The building site is bounded on three sides by streets and is adjacent to another building on the fourth.

The general contractor cast fourteen slabs in two stacks for the five standard floors, one mezzanine floor, the roof, and a penthouse. Each of

the floors, as well as the roof, is made up of two 70 x 60-foot lift slabs. The exterior walls of the structure are of cast-in-place architectural concrete, and they tie into the lift slabs at each floor.

Cast during winter

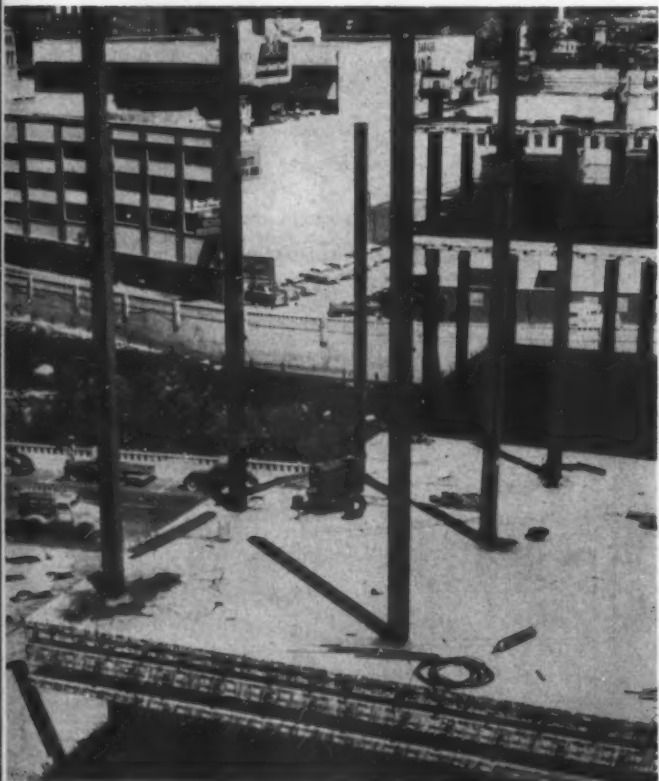
A substantial saving in work time was effected by using the lift-slab process. Cast-in-place floor slabs would have meant a difficult and time-consuming operation during the winter months.

As it was, Brunzell started in December, 1959, and carried the work through the winter. The adjacent building was underpinned, and the spread column footings were cast during weather that required heated concrete, salamanders, and tarpaulin covers. The footing excavations were backfilled, and the ground-floor slabs were laid to serve as casting beds for the lift slabs.

During cold weather, the slabs were protected by an enclosure of frame and canvas with Concrete Equipment Co. heaters. Four heaters in the enclosure were operated for three



Phase 1 of work for the Home Furniture Co. store in Reno, Nev., is under way with the fourth and fifth-floor slabs being raised to the fourth-floor level where the sixth-floor slab and roof are temporarily locked. Fourteen 70 x 60-foot slabs are cast in two stacks. Jacks work from atop columns, leveling slab automatically within 1/4 inch during the lift.



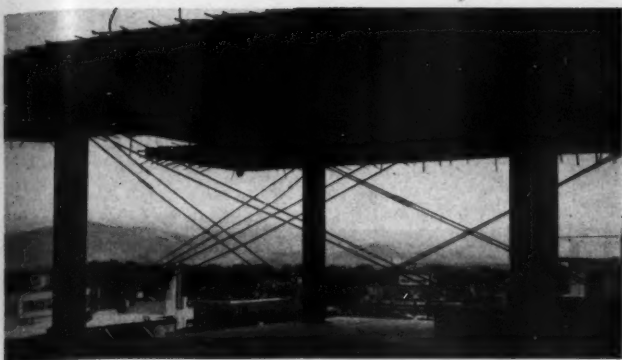
Phase 1 is completed for half the structure, foreground; the first, second, and third-floor slabs are in place and the remainder stacked at the fourth-floor level. Columns, spliced out, reach nearly 50 feet above the stacked slabs. In background, phase 2 is nearly completed for the front of the building. Note tendons at 18-inch centers in both directions.



At the top of a column, a workman points out a heavy shear bar that fits through holes in the column and supports a slab. These steel bars are shimmed up tight and welded in place when slabs are in position. Welding is done as a safety measure. This system worked very well in this type of structure, where successive groups of slabs have to be jacked up the columns. Below, exterior concrete walls are being formed. Prestressing anchors around the edges of the slab will be encased in concrete cast for the walls. The perimeter columns are braced with a system that does not interfere with work on the exterior walls.



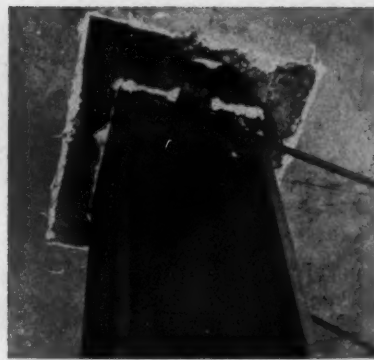
Speed to store job



The bracing system used to stabilize the structure after lift slabs are up and before walls are cast is simple and very efficient. Diagonal pairs of rein-



forcing bars are welded to tops and bottoms of adjacent columns. At far right, the



big pin that holds up the floor can be clearly seen. Oval holes were for the jacking rods.

days' curing of each slab. The transit-mix concrete, supplied by C. B. Concrete Co., Reno, contained 2 per cent calcium chloride and was mixed with hot water. By late spring, the warm concrete and protection were not required.

As the slabs were cast, prestressing tendons were inserted at 18-inch centers in both directions. These ten-

dons have 7 wires, each 0.25 inch in diameter. The tendons are completely wrapped in fire-tested slippage sheathing, which consists of mastic with a paper covering to prevent their adhering to the concrete. In the short direction of the slabs, the tendons have fixed anchors at one end, and the stressing is done from only one end. The longer tendons were stressed

from both ends of the slabs.

When all of the slabs had been cast and cured, Western Concrete Structures crewmen post-tensioned the tendons using 35-ton-capacity hydraulic jacks.

The steel subcontractor, Meredith Steel Co., Reno, then set the structural steel columns, which extended up above the fourth-floor level for

the first lift. These columns are 14-inch WF sections, with extra plates at the floor and stacking levels where the slabs are anchored. At these levels, 3 x 2½-inch steel shear bars were inserted through holes in the column to support the slabs.

Western used twelve 75-ton-capacity jacks per lift, all connected to an

(Continued on page 26)

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You can reduce your equipment investment because this new D-120 pusher-dozer

can be converted into a tractor-shovel

Now you can buy a big, powerful rubber-tired tractor for bulldozing, push-loading or towing, with or without an optional package for converting the unit into a tractor-shovel.

This new D-120 PAYDOZER, in addition to its convertibility, has numerous engineering and design features which result in outstanding performance and ease of operation.

More power: Weighing 55,000 lbs., the D-120 is powered by a 300 hp. turbo-charged diesel which gives it a higher horse-power-to-weight ratio than other machines of similar size.

Better balance and stability: Approved and exclusive use of dry ballast in all four tires gives better weight distribution and lower center of gravity — dampens tire bounce and permits better blade control.

Inside push arms: Unlike crawler-mounted dozers, all rubber-tired units have push-arm brackets mounted on the main frame. The D-120 push-arms, however, are located inside front wheels, close to main frame for the most direct transfer of forces and the least strain. This also gives greater accessibility to the front wheels for hub and tire servicing.

"Full" power-shift transmission: Hough-built, this unit does not require stopping for range shifts. It is a full-reversing, constant-mesh type with four speed ranges, up to 26 mph., in both forward and reverse.

Matched torque converter: This is *not* a compromise converter for both dozer and shovel application. Instead it is designed specifically for bulldozing and makes fullest use of the tremendous engine power to develop maximum tractive effort. A torque-converter change is part of the bulldozer-to-shovel conversion package.

"Power-transfer" differentials: Provided on both axles for the best possible traction. When one wheel is capable of more tractive effort than the other on the same axle, it can automatically receive 38% more torque.



PAYDOZER is convertible to this H-120 PAYLOADER

"Three-way" power blade control: The D-120 blade is 12'-4" wide at the cutting edge and 4'-8" high. Adjustable from 1'-6" below grade to 3'-2" above; pitch adjustment of 35 degrees and blade tilt of 10 degrees on either side.

Hydraulic features: The system is closed and pressure-controlled to exclude air-borne dirt and foreign matter. Transmission and torque-converter oil is kept cool by a separate fan-cooled radiator.

Ease of operation: In addition to power-shift transmission there are twin hydraulic steering booster rams, and 4-wheel power air brakes with "Operator's-choice" brake controls—exclusive in its class. These dual foot pedals permit choice of braking with or without transmission engaged for any operating situation.

Standard equipment: Included are open-type cab, front and rear windshields and wipers, special lights and swinging draw-bar. Standard tires are 26.5 x 25 with 29.5 x 25 tires optional.

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Now the Model H-120 tractor-shovel
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into the new D-120 PAYDOZER giving you
two machines for about the price of one

The value of the H-120 PAYLOADER tractor-shovel, with its outstanding performance and productive capacity, is tremendously increased by an optional package which makes it possible to convert this tractor-shovel into a 'dozer.

Whenever seasonal conditions or any new projects dictate the need for 'dozer or pusher units, rather than loaders, these machines can be converted from one type to the other in a relatively easy and economical manner. Resulting benefits add up to greater flexibility and versatility while, at the same time, investment costs are almost halved.

The H-120 tractor-shovel is outstanding in many different ways. It has . . .

More power than any other machine in this category with its 300 hp turbo-charged diesel engine. In addition, the torque-converter is engineered so that engine output is properly proportioned between traction and hydraulic requirements, and so that both these demands can be served simultaneously without engine lug-down.

More dumping clearance, and more dumping reach, than comparable units. It loads big trucks and railroad cars more evenly and easier — stockpiles higher.

Better balance and stability because of the exclusive use of extra-strong "T-1" steel for box section boom arms that saves over a ton of dead weight on the load-carrying end. The approved and exclusive use of dry ballast material in the rear tires lowers the center of gravity with 50% of the weight below the rear axle.

Distinctive boom design, forward and clear of the operator for greater safety. It features a single bucket-tilting ram and high-leverage linkage with tremendous breakout force — also simplicity and fewer parts, reducing wear and maintenance.



PAYLOADER is convertible to this D-120 PAYDOZER

Hough-built full power-shift transmission of advanced design. It is a full reversing, constant-mesh type providing 4 gear ratios in each direction — requires *no stopping* for a "range" shift.

Easy operation because of power-shift, power-steer and 4-wheel power air brakes and "Operator's-choice" dual brake pedals. This feature, exclusive in its class, gives the operator the option of braking with or without the transmission engaged.

Many other features that mean better performance, lower maintenance and more value, such as: closed pressure-controlled hydraulic system; separate fan-cooled radiator to keep transmission-torque converter oil cool; torque-proportioning differentials in both axles; canopy-type cab with front and rear windshield wipers and special lights as standard. Bucket sizes are available from 3¾ to 8 cu. yd. (S. A. E. rated). Exclusive Drott 4-in-1 bucket can also be supplied.



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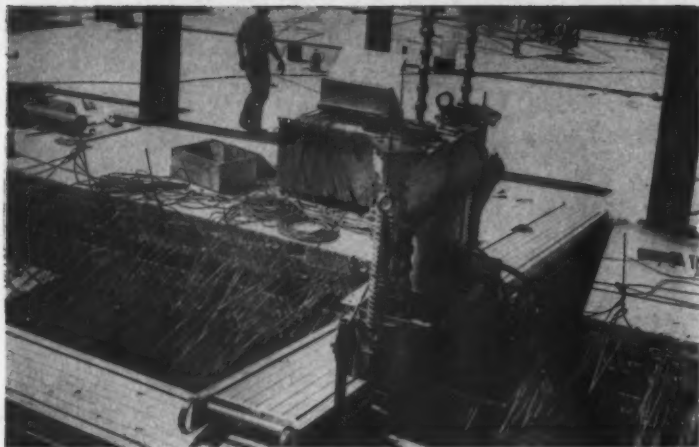
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Street

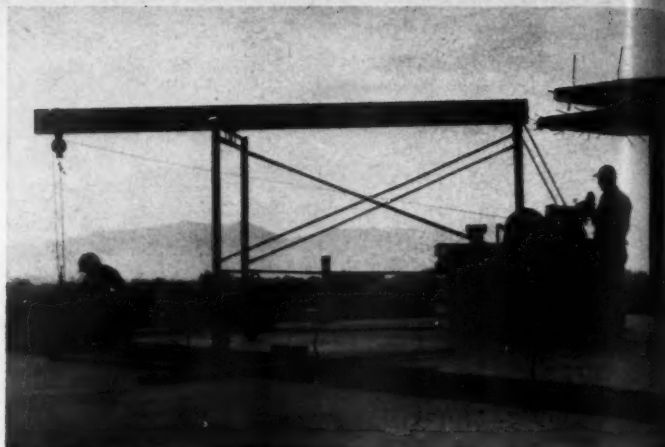
City State

2-B-2

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The 7 and 8-inch concrete roof and floor slabs are lifted by 75-ton-capacity jacks operated from an electric control panel on the top slab. The prestressing and lifting work was done under a separate contract by Western Concrete Structures Co., Inc., Gardena, Calif.



This little scaffold crane lifted all form panels for the walls from one floor to the next. Built from a section of scaffolding and fitted with wheels and a steel beam to serve as a boom, it is operated by a Muller hoist powered by a small gasoline engine. Forms are raised through the openings between pairs of lift slabs.

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(Continued from page 21)

electronic control panel. The individual jacks were mounted atop the columns, with the lifting rods extending down to slabs to be lifted. Through the central control panel, the hydraulically powered jacks automatically leveled the slabs with $\frac{1}{4}$ inch during the lift.

In the first operation, four slabs—for the fourth, fifth, and sixth floors, and the roof—were raised in pairs to the tops of the columns and stacked temporarily with the fourth-floor slab in its final position. The first, second, and third-floor slabs were then lifted to their final positions.

After careful guying of the structure in this position, the columns were spliced out to their full height. At this point, the highest columns extended 47 feet above the fourth-floor level, giving the structure a most peculiar appearance. This is the highest single lift ever accomplished, according to the contractor.

The individual slabs were then jacked to their final positions and secured to the columns. The heavy steel shear bars were inserted in the holes in the columns just under the slabs, shimmed up snug, and then welded in place. With this system, the bearing of the floors on the columns is not dependent on the welds, which were made as a safety measure.

When the lift slabs were all in



This closeup of a column shows the shear-bar bearing plate welded between the flanges of a column. A similar plate is on the opposite side, and there is a hole through the web so that the shear key can reach through the column.

CONTRACTORS AND ENGINEERS

place, the steel columns were braced at each floor level so that the exterior walls could be released. Pairs of reinforcing bars were welded to the tops and bottoms of adjacent perimeter columns to make a series of X-braces between all of these columns. Since the floors extend out beyond the columns all around the structure, this bracing system was entirely clear of the exterior walls and was only a minor obstruction to the forming and placing of these walls. When the exterior walls were completed, the braces were cut free from the columns.

Each of the lift slabs covers approximately half the area of the building. A 3.5-foot closure strip was left between the slabs to be cast in place later. Reinforcing dowels were left extending from all edges of the slabs to tie the slabs together at the center and into the walls around the outside. The exposed stressing ends of the prestressing tendons were encased in concrete as the closure strip and the outside walls were cast.

Exterior walls are concrete

As soon as the floor and roof slabs had been raised to the temporary position, Brunzell's crews began forming and placing the exterior concrete walls. These 8 and 9-inch walls were formed with $\frac{5}{8}$ -inch Plyform, sealed with Burke Formseal, backed with 2 x 4 studs and wales, and tied with Kruepper Taper-Ties.

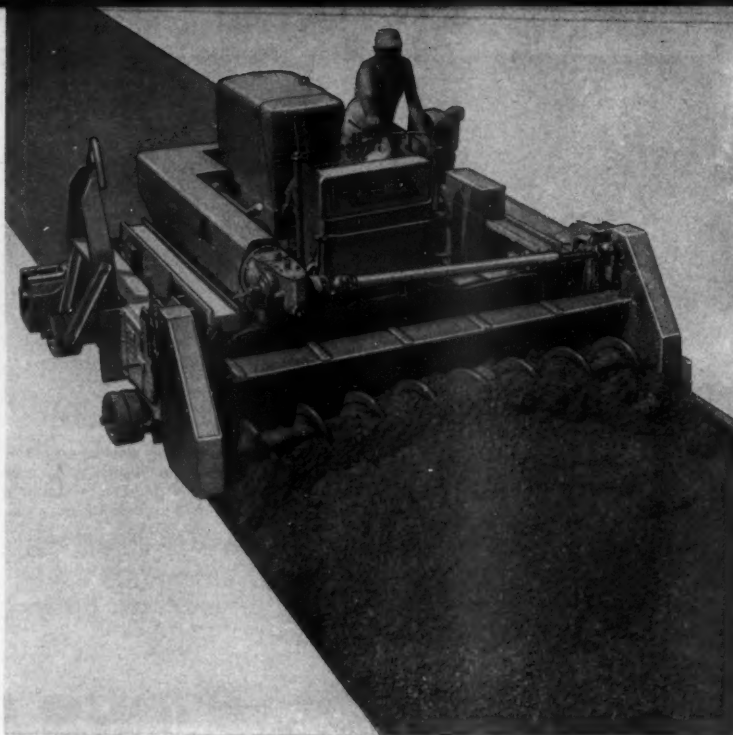
One wall of the structure lies within 2 inches of the adjacent building for the first two floors. This presented a special problem in tying the form, since the 2-inch space had to be maintained. The contractor solved the problem by having some special snap ties made for this situation. The inside end is a standard snap tie, but the outer end is threaded to fit a steel nut $1\frac{1}{4}$ inches square and $\frac{3}{4}$ inch thick. There are no studs or wales on the outside—just the $\frac{5}{8}$ -inch Plyform with these ties at 16-inch centers. This system worked very well.

Concrete for the walls was delivered by transit mixers and hoisted by a Lorain 25-ton truck crane, using two Gar-Bro 1-yard buckets, to a Gar-Bro hopper mounted on the floor at the top of the wall being constructed. The concrete was transported from the hopper to the forms in hand bug-ies.

Brunzell devised a light portable hoist that worked from the roof to raise all of the forms from one floor to the next as the walls were cast. This hoist consisted of a section of tubular steel scaffolding mounted on castor wheels, with a steel beam bolted to the top and extending out over one end. A small Muller hoist powered by a gasoline engine was mounted on the opposite end of the scaffold.

This light rig could easily be rolled to any position on the roof with the end of the beam extending over the wall line. The hoisting cable, running through a block on the end of the beam, was dropped down on the outside to pick up and raise the panels to upper levels.

The interior form panels were all brought over to the 3.5-foot opening



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between the floor slabs and raised from floor to floor by the same little crane.

The structure was completed late last year, about ten months from the time ground was broken.

Personnel

Supervising the operations for Brunzell were superintendent Dean Kishpaugh, carpenter foremen Pancho Alcano (a Paiute Indian) and Lud Carrao, and labor foreman Wilbur Henderson. The stressing and lifting operations were supervised by James C. Hunter of Western Con-

crete Structures Co., Inc.

The architect for the structure was Ralph Berger of Reno, and the structural engineer was T. F. "Tom" Fitzgerald of San Francisco. THE END

New AISC specifications

■ The American Institute of Steel Construction, New York, N. Y., has released two new standard steel specifications.

The specification and loading tables for open-web steel joists (long-span or L-Series) replaces the earlier AISC-SJI jointly adopted specifica-

tion that has appeared in the "AISC Manual of Steel Construction" since 1955.

The specification for architecturally exposed structural steel is completely new. It establishes standards for closer dimensional tolerances and smoother finished surfaces than required for ordinary structural framing. The specification is aimed at insuring finished appearance while keeping costs in line.

Copies of the two specifications may be obtained free of charge from AISC, 101 Park Ave., New York 17, N. Y., or any AISC regional office.



Concrete is being placed by air for prestressed tanks of a water-treatment plant in Santa Cruz, Calif., where lack of space precluded use of the crane-and-bucket method. Mix is carried through forms by a pipe that rises in the center of the tank to a swivel elbow and is carried out to forms on a truss.



At the end of the truss, a wheel rides a track around the exterior of the tank wall and the pipe is rotated 360 degrees as the concrete is carried into place by a tremie. As rotary placement is continued, sections of exterior forms are added. Concrete work was never held up waiting for forming to be set.



Transit mixers deliver concrete to the Airplaco CP-30 placer located just outside the wall forms for the tank. The compressor supplies air for the operation of the rig. The scaffolding supports the track for the radial placer and the work platform for the men operating it.

(Additional photo on front cover)

Pneumatic placer, unique rotary distributor

Place concrete by air in tight quarters

Contractors and Engineers staff article

Placing concrete by air provided an answer to the problem of casting four cylindrical prestressed-concrete water tanks on a congested hillside location where lack of space precluded the usual crane-and-bucket method. The unique placement device the contractor used for this operation delivered concrete directly into the wall forms around the complete circumference of the tanks.

The concrete was delivered in tran-

sit mixers that discharged into the hopper of an Airplaco Model CP-30 concrete placer. The mix was forced through an opening in the tank wall to the center of the tank. Here a pipe, supported on a scaffold tower, rose to an elevation just above the top of the finished interior wall, where it was fitted with a swivel elbow that permitted a full 360-degree turn. The pipe was then carried on a truss reaching from the central tower out to a circular scaffold around the outside of the tank. The outer end of

the truss was supported on a rubber-tire wheel running on the scaffold.

At the end of the discharge line, directly over the wall form, an Airplaco discharge box was attached to the end of the pipe. This device prevented segregation of the concrete as it diverted the material from the overhead horizontal pipe into extendable tremies leading down into the form. The device was rolled around and around the structure to place the concrete in successive uniform lifts around the complete circle.

The exterior wall is erected only 2 panels high at the time of the first placing of the concrete. As the concrete elevation rises, carpenters place another ring of forms. This goes on until the exterior wall is completed.

Plant augments water supply

The project is the construction of the new Graham Hill water-treatment plant for the city of Santa Cruz, Calif. The contractor for the \$1.5 million plant is a joint venture of the Shanley Construction Co.

San Francisco Co., Inc. designer, Branciforte, chemical, Francisco, construction, The plant water use the s essential tanks, sed era of re built of concrete.

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Our Razor-Back and Razor-Lite shovels are forged with an extra-strong (13 gauge) center backbone that extends from the top of the socket all the way to the cutting edge. To lighten their weight, our blades are tapered thinner at the sides, where shovels never wear out. Give more service per dollar than any other contractor's shovel. The only shovels "fully guaranteed" in writing.

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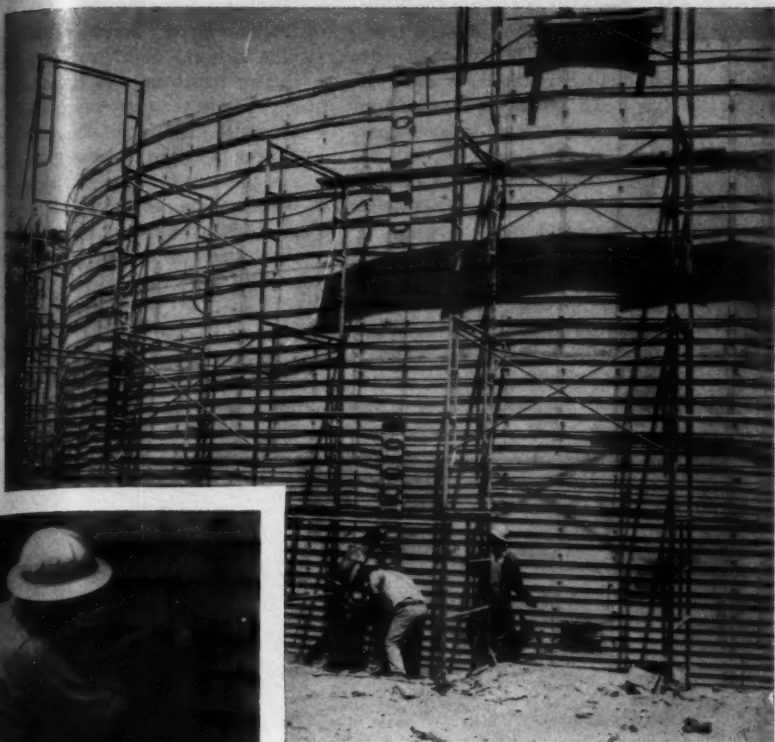
RAZOR · BACK®
For Big Loads and Super-Strength

RAZOR · LITE®
Strongest and Lightest Lightweight Shovel

THE UNION FORK & HOE COMPANY, Columbus 15, Ohio

For more facts, use Request Card at page 18 and circle No. 267

CONTRACTORS AND ENGINEERS



Stressing is done with high-tensile $\frac{3}{8}$ -inch rods fitted with turnbuckles. Rings of rods are spaced from 4 inches at the bottom to 18 inches at the top. A workman uses a long-handled wrench to tighten the turnbuckles. Readings on an extensometer, left, measure the stress. It takes 7 rods, each 34 feet 11 inches long, to make a complete loop around a tank.

San Francisco, and the W. J. Nicholson Co., Inc., Santa Clara. The designer, Brown & Caldwell, civil and chemical engineering firm of San Francisco, is also supervising the construction.

The plant, which will treat domestic water from several sources, will use the sand-filtration process. Its essential features are flocculation tanks, sedimentation basins, and filters of rectangular design that are built of conventionally reinforced concrete. The wash-water storage

tank, wash-water reclamation tank, sludge storage tank, and filtered-water tank are cylindrical structures with prestressed-concrete walls, concrete floors, and timber roof framing.

An attractive operations building, harmonizing with the surrounding residential area, is about the only part of the plant visible from the adjacent road. The remainder of the structures lie over the edge of a steeply sloping hillside overlooking

(Continued on next page)

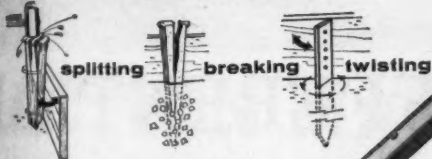


A Thomas Handi-Crane, mounted on a surplus military truck and driven by the truck engine, is useful in placing concrete for floors of the plant structure. It gets into areas too small for a conventional crane. Below, as the $\frac{1}{2}$ yard of concrete is dumped from the bucket, it is consolidated with a Homelite vibrator powered by a Homelite portable generator.



STEEL STAKES by dee

STOP this WASTE



HERE'S HOW



**HOLDS SOLIDLY
DRIVES RAPIDLY...**

regardless of rotation or subgrade

**100 or more uses
Set up 10 times faster
Strip 20 times faster**



dee Concrete Products Co.

670 N. Michigan Ave., Chicago 11, ILL.

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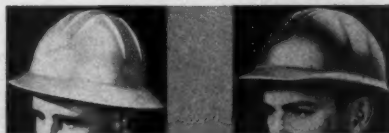
6 Jackson Safety Hats & Caps



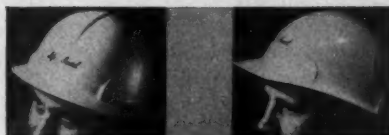
FIBER GLASS hats (left) and caps are compression molded with polyester resins. They exceed Federal specifications. Eight colors.



ALUMINUM hats and caps are light and strong, pass Federal specifications for impact and penetration resistance. Polyethylene fixed-safety-margin headgear are easy to adjust and clean. Eight colors.



DIELECTRIC plastic hats and caps pass Edison Institute specifications for electrical resistance and Federal specifications for construction workers. Polyethylene headgear. Four colors.



Jackson Products

31739 Mound Road, Warren, Michigan

Sold Everywhere by Better Welding Supply and Safety Products Distributors

For more facts, use Request Card at page 18 and circle No. 269

(Continued from preceding page)

the city. These structures were built on benches excavated out of the hillside. The steep slopes and the limited space on the benches were the primary factors that ruled out the crane-and-bucket method of concrete placement and led to the air-placement method.

Forms raised during placement

The walls of the circular tanks, as well as the other plant structures, were formed with Universal form panels. The inside forms for the cylindrical walls were set to the full

height of the tanks and braced in a vertical position. The form was left somewhat limber in its circular alignment so that it could seek a truly circular shape as the concrete was added uniformly around the perimeter. A check of the structure showed that the form did attain a circular shape with very minor deviations. The conventional reinforcing steel was then placed around this inside form and tied in place. The outside form was then placed to a height of just one 4-foot form panel.

Using the air-placement equipment and the rotary distributor, crews placed concrete to fill the form to

this level. The low outside form simplified the handling of the tremie—through which concrete was lowered into the form—and made the vibration easier and more positive. Form crews were able to set Uni-Form panels in place as concrete work was being done; there was no delay to the placing operation, since it did not have to wait for forms to be set.

Panels added

When the concrete had been placed to fill this portion of the form, another row of panels was added to the outside form, and the concrete operation was repeated. With each

successive placement, the tremie was shortened. The process continued until the wall was completed. The placing equipment was moved from one tank to the next as construction proceeded. Since all of the tanks are 75 feet in inside diameter, the only modifications from one setting to the next were the length of the vertical riser and the extensions to reach the point where the concrete placer could be set.

Rods are post-tensioned

After a curing period of 28 days, the tank walls were prestressed by the installation and tensioning of



SWITCH TO

KON-TORK DIFFERENTIAL

KON-TORK differential provides every Allis-Chalmers motor scraper with maximum traction to match any working condition—provides you with all-weather production.

Only Allis-Chalmers offers exclusive KON-TORK differential in every motor scraper. This traction-

boosting benefit makes dirt pay under severe job conditions.

KON-TORK works automatically, whenever it's needed. In the cut, on the haul or soft fill, it helps you by automatically controlling the transfer of torque to each drive wheel . . . giving you the benefit of all available traction *all the time*.

Example: When one drive wheel hits soft going, KON-TORK takes hold and transfers torque from the slipping wheel to the wheel with solid footing to keep the machine moving out. Another nice thing

move ahead with

steel rods wrapped around the exterior. This phase of the work was done under a subcontract by Steel-Jab, Inc., Castroville, Calif.

The 3/4-inch steel rods were supplied in 35-foot lengths threaded for turnbuckles on both ends. Seven of these rods were joined to make one complete ring around the 75-foot-diameter tanks. The rings of rods were at a variable spacing, ranging from 4 inches at the bottom to 18 inches at the top of the tanks.

After all of the rods for one tank had been assembled and placed in their approximate locations, a crew of workmen tensioned them to a

uniform stress of 35,000 psi. As two men with long-handled wrenches tightened the turnbuckles successively around a ring, other workmen tapped the rods with hammers to eliminate unequal stresses due to friction between the rods and the concrete.

To determine the amount of stress applied, a technician measured the elongation of the rods with an accurate extensometer as the stress was being applied.

The tensioning crew started at the bottom of the tank, placing each rod in its exact location, applying the tension at the seven turnbuckles, and then moving up to the next ring.

When the tensioning was completed, an outer coating of gunite was applied 1 1/2 inches thick over the entire exterior of the tanks. This work was done by a subcontractor, Johnson Western Gunite Co., Oakland.

Small crane handles concrete

On some other structures of the plant, a small truck-mounted Thomas Handi-Crane proved very useful in bucketing concrete from the transit mixers to the forms. This rig could work itself into spaces too small for a conventional crane. Yet it easily handled a 1/2-yard concrete bucket.

While the circular tanks have timber roof framing and built-up roofs, some of the other structures were framed with precast, prestressed bents and roofed with precast, prestressed-concrete roof panels. These prestressed members were supplied by Delta Prestress of Sacramento.

Personnel

Supervising the job for the Shanley-Nicholson joint venture are job superintendent Paul McDonald, project engineer Bruce Duncan, labor foreman Cal Breakfield, and carpenter foreman Del Rawls.

The project engineer for Brown & Caldwell on the plant is Les Dunlap. The resident engineer on the construction is Gordon Heritage. The director of the water department for the city of Santa Cruz is Weston L. Webber.

THE END

1960-61 AED directory

■ Associated Equipment Distributors, Chicago, Ill., has published its revised and re-edited 1960-61 Industry Directory.

Issued every other year, the 400-page directory includes both members and nonmembers of the association, and is divided into four main sections.

The distributor section includes over 1,600 dealers throughout the United States and Canada, their key personnel, business addresses, branches, telephone numbers, and manufacturers represented.

The manufacturer section includes products, trade names, and distributors of more than 700 companies.

The products section lists all types of construction machinery and identifies the manufacturer.

A trade-names section makes it easy to locate a manufacturer when only a product's brand name is known.

The directory may be obtained from Associated Equipment Distributors, 30 E. Cedar St., Chicago 11, Ill., at \$20 per copy. Postage costs are \$1.75 for first-class mail and \$2.25 for air mail.

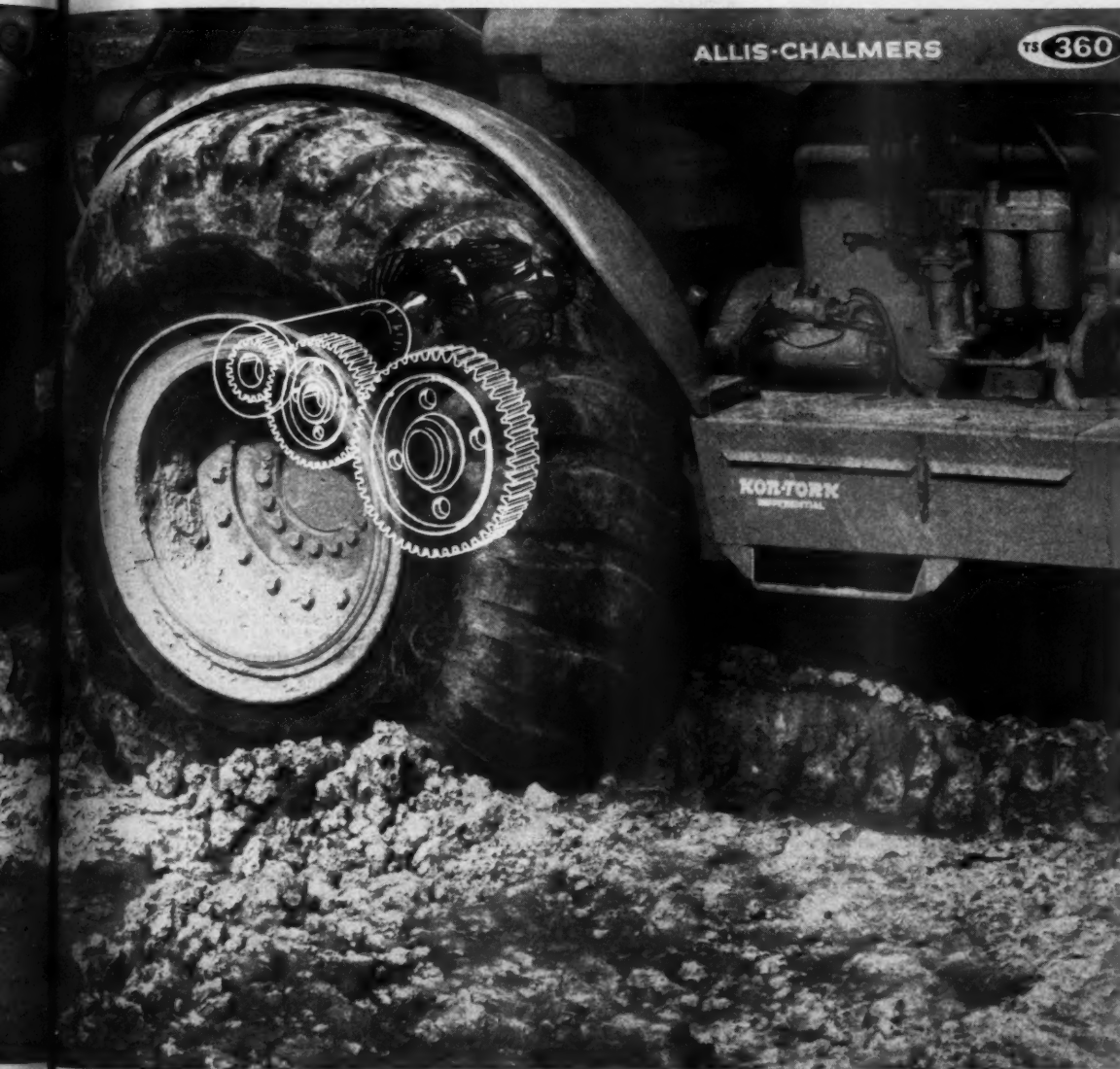
Lathing and plastering is subject of handbook

■ A new "Manual of Lathing and Plastering" is available from the National Bureau for Lathing and Plastering.

The 366-page illustrated manual, divided into nine chapters, covers architectural considerations, basic materials, lathing and preparation for plastering, plastering, lath and plaster systems and assemblies, functions and quality of lath and plasterwork, economics of lath and plaster, acoustical and thermal characteristics of plasterwork and radiant heating, and fire resistance in building construction.

It also contains a glossary of terms, notes, references, a general bibliography, and an index.

It can be obtained from the National Bureau for Lathing and Plastering, Inc., 755 Nada Building, 2000 K St. N.W., Washington, D. C. The price is \$7.50 per copy.



TRACTION MAGIC, EVEN IN MUD

about KON-TORK... it's simple! Only five working parts... never needs adjustment! But this is only one of many features that keep Allis-Chalmers motor scrapers out front on every job. You should see what full-power steering—double-acting bowl jacks—hydraulic forced ejection and highest ground lift can do for your production. Try any one of 3 models from 10 to 30 yards. See for yourself. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

KON-TORK is an Allis-Chalmers trademark.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.



ALLIS-CHALMERS



...power for a growing world

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Two-paver concrete spread aided by combination rig



A modified Rex spreader, with auger-type spreader at front, a full-width vibrator in the middle, and a transverse screed mounted in back, handles three operations simultaneously during paving of the Clearview Expressway in New York City.



Concrete is trimmed to 6 inches by a Jaeger spreader. Wire-mesh reinforcing is then placed and concrete dumped for the top 3 inches of slab.

Contractors and Engineers staff article

Production of 2,800 to 3,000 linear feet of 12-foot-wide 9-inch reinforced-concrete pavement every 9-hour workday was average for Slattery Contracting Co., Inc., Maspeth, N. Y., on the Clearview Expressway in New York City. In the 2-paver train, a multiple rig combining three operations proved unique and very useful.

This new route will provide a needed link between the Throgs Neck Bridge and the major arteries on Long Island. Slattery was awarded three adjacent contracts, totaling over 5½ miles and amounting to more than \$21 million worth of work. The paving of the three sections was handled separately, since each had a different completion date.

Two Koehring 34-E pavers led the train, the first paver dumping enough mix between the 9-inch steel forms to permit a Jaeger spreader to trim the concrete to a 6-inch depth. Welded-wire reinforcing was placed at this level.

The second paver followed this operation, riding outside the forms and placing additional concrete over the wire mesh. Carbon black was added at the skip of the second paver to give a dark gray color to the top 3-inch lift of the slab. This coloring is designed to reduce glare on the roadway surface.

Multiple machine

The top 3-inch lift of concrete covering the wire mesh was spread by an unusual but versatile machine. Basically a Rex spreader, the rig was modified and equipped with an auger-type spreader in front, a full-width vibrator supported under its midsection, and a rear-mounted transverse screed.

Following this unique rig, which combined the spreading, floating, and screeding operations, was a Koehring transverse finisher equipped with two screeds.

Slattery formed the transverse joints by inserting metal Unitubes into the concrete. These were planted

The second machine that

into the to the Koehring 2-man crew toothed blade slab's surface aggregates in

At each contractor stands adjacent before contractor place by the forming the bottom portion

The Unitubes previously crete and the two cl the exact tubes had vented any caused by that follow

Once the flush with crete, the manually tubes were



ON-TIME

maintenance cuts
down-time **DOWN**

Hobbs

INDUSTRIAL HOUR METERS



For use with diesel, gasoline
and electric powered equipment

PLANNED MAINTENANCE based on actual hours of use is the answer to more GO-time and less DOWN-time on your equipment!

TRUE RUNNING TIME gives you a realistic basis for renting and leasing, service contracts, buying and selling.

HOBBS electrical timing instruments are the basic source for the facts you need—revolution counters cannot do the job. Distributors in principal cities . . . WRITE FOR CATALOG 600.


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Go right to the job—get it done fast with either of these

2 COST-CUTTING HOBART WELDERS



GAS OR DIESEL ENGINE OPTION



EMERGENCY AC POWER PLUS DC WELDING

THE 250 AMP. "MAINLINER"
for exacting pipeline, structural and in-the-field welding.

Progressive contractors and practical welders like these extra built-in features most: honest 250 ampere DC welding capacity • hot, fast, stable arc • 500 precise welding heat settings • made-to-last construction.



Write for complete details and prices on these exceptional values

HOBART BROTHERS CO., BOX 821, TROY, OHIO, PH. FE: 2-1223
"Manufacturers of the world's most complete line of arc welding equipment"

THE 200 AMP. "POWER/WELD"
for DC welding, AC power to run tools, lights, motors, etc.

Save hundreds of dollars on repairs, costly delays, labor loss. Keep your equipment working. The "Power/Weld" can help by providing: 1 KW AC power while you weld • 5 KW 110/220 v. AC for full time operation • DC welder has 100% duty cycle.

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CONTRACTORS AND ENGINEERS



The second Koehring 34-E dumps ahead of the second spreader, the modified Rex machine that handles the concrete spreading, vibrating, and screeding operations.



A Koehring transverse finisher equipped with two screeds follows the modified spreader. Transverse joints are formed in the concrete by metal joint formers.

into the top lift immediately behind the Koehring transverse finisher. A 2-man crew used a 12-foot-long saw-toothed blade to cut a slot into the slab's surface and to separate the aggregates in the fresh concrete.

At each of the joint locations, the contractor positioned two metal stands adjacent to the steel forms before concrete was placed. These contractor-built clips were held in place by the metal strip and chairs forming the doweled joint in the bottom portion of the slab.

The Unitube was placed into the previously prepared slot in the concrete and supported at each end by the two clips. This automatically set the exact depth to which the Unitubes had to be placed and also prevented any movement that might be caused by the finishing operations that followed.

Once the Unitubes were positioned flush with the surface of the concrete, the entire area of the slot was manually troweled so that the Unitubes were embedded in the slab. The

clips supporting the Unitubes were retrieved after the side forms were stripped the following day, and they were re-used over and over again.

After transverse joints were formed, the concrete surface was finished with aluminum hand lutes and textured with a burlap drag. A white-pigmented curing compound was finally sprayed on the surface to permit stripping of the forms the next day. Curing compound was sprayed on the exposed, vertical sides of the slab after the forms and clips were removed.

Joints crimped

The use of the Unitube strips for joint construction eliminates sawing, which requires tight scheduling and leaves an exposed open joint. The Unitube joint is formed by crimping the top of the hollow, triangular-shaped strip and filling the resulting void with an asphaltic sealer.

Slattery planned to crimp and seal the joints just a few days before the

(Continued on next page)



**500
TONS
OF
CASTINGS
DAILY!**



With the recent opening of plant #2, shown above, our production potential of Gray and Ductile Iron Construction and Industrial Castings has now reached a maximum of 500 tons daily. This capacity, plus 15,000 patterns, plus a good on-hand supply of standard castings, plus 90 years experience in the business, is your assurance of prompt delivery, superior quality, complete uniformity and practical economy.

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New and fully illustrated 168-page catalog of construction castings will be sent promptly upon request.

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**SILENT HOIST
KRANE KAR**

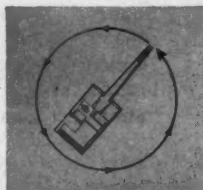
SAVES

\$478.03 EVERY MONTH

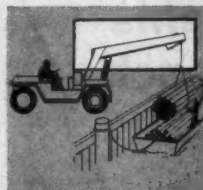
says V. JAMES DeNAPLES

Technical Services Foreman
Norma-Hoffman Bearings Corp.

"This versatile yard crane simplifies our materials handling operations, cutting travel trips and saving us a considerable amount of work and time. Our KRANE KAR speeds unloading of incoming materials, transports and stacks them at storage..." RESULT: Monthly net savings—\$478.03!



360° BOOM ROTATION—Hydraulic Crane revolves on heavy-duty, double-race ball-bearing turntable. Special manifold permits continual rotation and simultaneous, smooth, positive control of hoisting, topping, telescoping.



GREATER WORKING REACH—Boom is pivoted well forward to provide working reach of entire boom length! High boom underclearance permits efficient handling of bulky loads in box cars, trailers, etc.



MAXIMUM SAFETY—Dual traction tires means high flotation and maximum protection against tire blow-out upsets. Bonus Capacity—Hydraulic outriggers step up working capacity to 24,000 lbs.

2 SIZES: MODEL FAX—12,000 lbs. • MODEL FAY—20,000 lbs:

ALSO AVAILABLE:

KRANE KAR—180° SWING BOOM—Mechanical Geared and All-Hydraulic Models. 5 Sizes: 1½, 2½, 5, 10, 12½ ton capacities.

Literature Available:

On 360° Swing Boom—Bulletin No. 99 On 180° Swing Boom—Bulletin No. 79

SILENT HOIST & CRANE CO.
BROOKLYN 20, N. Y.

For more facts, use Request Card at page 18 and circle No. 274



After a 2-man crew cuts a slot in the concrete with a saw-toothed blade to separate the aggregates in the mix, the Unitube is inserted.



A B-K subgrader shapes the grade between the 9-inch steel forms ahead of the paving spread. It pulls a planer, a scratch board, and a contractor-built rig holding five portable hand rollers. A vibratory roller follows.



every
foot
of
this
trench
is
tough
digging

A trench through unblasted rock, 3 miles long, 10 ft. wide and an average of 16 ft. deep, is a tough test for any hoe. This 2½-yd. Lorain 85A rips out up to 250 ft. of this trench a day for a 72" Dallas water main.

This kind of outstanding hoe performance is typical of what the Lorain 85A can do as shovel, crane, dragline or clamshell as well. Here are a few of its modern features:

Shovel and hoe booms of all-welded, high strength steel box sections.

Square-tubular-chord crane boom. Lighter weight, stronger, for longer booms, greater reaches.

Two-lever, "Joy-Stick" air power controls blend operations for faster, smoother cycles.

"Shear-Ball" connection for "rock steady," smooth swing. No adjustment, maintenance or lubrication problems. Covered by a 10-year warranty.

Three power shafts for simultaneous hoist, swing and travel. Give maximum flexibility.

Air-ease, crawler controls. Air power does the work. Two travel speeds in both directions.

There are many more. Ask your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®

ON THE MOVE

PLANTS in Lorain, Elyria, and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ¾- to 2½-yard capacity - Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes - Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

(Continued from preceding page)

6-lane expressway is opened to traffic. This would prevent any spalling of the joint edges caused by equipment rolling over loose stones lodged in the joints. By holding off on the crimping operation and leaving the Unitubes flush with the concrete surface, clean joints with no spalled edges would be assured.

The 9-inch steel forms were generally maintained in place ahead of the paving train for a day's work.



This is the metal strip forming the bottom of a transverse joint; the clip next to the steel side form supports the joints placed into the top surface of the slab.

Form stakes were driven by air hammers powered by a self-propelled air compressor.

A Blaw-Knox subgrader was then winched along the forms to obtain the final grade of the base course. The subgrader also pulled a planer and a scratch board to smooth and test the grade. In addition to the planer and scratch board, the subgrader pulled a contractor-built frame holding five portable hand rollers. This entire operation was then followed by a portable vibratory roller.

The two 36-foot roadways are separated by an 18-inch grassed median with an aluminum woven-wire fence sandwiched between two steel guard-rails.

Personnel

Slattery Contracting Co., Inc., and Slattery Tunnel Corp. held the work under a contract with the New York State Department of Public Works, which has Austin M. Sarr as district engineer. Blauvelt Engineering Co. of New York City was the designer. Jim Saunders is superintendent for Slattery.

THE ENR

CONTRACTORS AND ENGINEERS

Labor Review

Professional engineers fight recent change in Davis-Bacon policy

Labor Department officials have indicated that they will proceed "slowly and cautiously" in applying a recent ruling that survey-crew personnel are subject to the Davis-Bacon Act, according to the National Society of Professional Engineers.

NSPE protested the policy shift and requested reconsideration of the ruling that "chainmen and rodmen whose work is largely of a physical nature such as clearing brush, sharpening and setting stakes, handling the rod and the tape, and other comparable activities, are laborers and mechanics within the meaning of the Act."

The request for reconsideration was made in a letter to Labor Secretary Mitchell by Paul H. Robbins, executive director of NSPE.

In it, Robbins maintained that rodmen, chainmen, and instrumentmen "are required to have technical knowledge and a basic understanding of the engineering and surveying aspects of the work." He went on to note that the Ohio attorney general on two separate occasions considered the same question under a comparable state law and concluded in both instances that the legislation was intended to cover "only men who work with their hands, and who are included in the commonly accepted definitions of 'mechanic, workman, and laborer,' and did not . . . include persons whose work is based on professional training."

AFL-CIO president Meany appoints Lane Kirkland as executive assistant

AFL-CIO president George Meany announced the appointment of Lane Kirkland as executive assistant.

Kirkland, research and education director for the operating engineers, and a former assistant director of the AFL-CIO Department of Social Security, has been with the operating engineers since 1958.

Middle Atlantic boilermakers settle for 40-cent package spread over two years

Wage rates for field construction work in four states and the District of Columbia were increased 15 cents, retroactive to November 1, under a new agreement between Boilermakers Lodge 193 and national contractors operating in the area.

The two-year contract provides for another 15-cent raise November 1, 1961. Contractors are also obligated to begin payments to the Boilermakers-Blacksmith National Pension Trust under the new agreement. As in other agreements, the pension-fund contribution is 5 cents an hour for the first three months. It is increased to 10 cents an hour after this period is concluded.

Pay raise of 15 cents diverted to pensions by Seattle laborers

The Associated General Contractors and Homebuilders' associations in western Washington agreed with the Western District Council of Laborers on diversion of a 15-cent wage increase, which went into effect January 1, into a pension fund.

The increase had been negotiated

as part of a three-year agreement signed early in 1959. The hourly wage rate will remain \$3 during the final year of the agreement. In addition to the 15-cent pension payment starting this month, the employers contribute 10 cents hourly toward health-welfare.

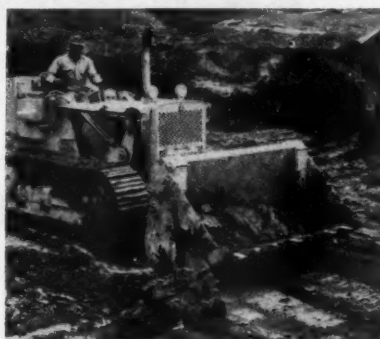
Illinois carpenters sign new contract, take 55 cents over 2 years

Wage rates for members of the Carpenters District Council of Madison County, Illinois, went up 10 cents immediately, and will go up 45 cents more during the next two years

under a recent agreement between the council and the Contractors Association Council at Granite City, Ill.

Deferred increases are due at yearly intervals. The initial increase boosts members' pay rate to \$3.90 an hour; 20 cents more is due August 1, 1961; and a final 5-cent raise takes effect August 1, 1962. The rate for the final year of the agreement will be \$4.35.

The contract, which covers approximately 1,500 people, includes 10 cents an hour health and welfare, and provides for an eight-hour day and a five-day week.



GRADE With "carry-type scraper" action, grade with inch-close labor-saving accuracy. The earth "boils" into this TD-9 Four-in-One!



STRIP Set the 4-in-1's clam in "carry-type scraper" position—strip sod or topsoil precisely! Get jobs other rigs can't do!



SPREAD On-the-go, put down a layer of topsoil, fill dirt, or "cover" with exclusive 4-in-1 "carry-type scraper" accuracy!

Only clam-action 4-in-1's multiply your money-making ability!

Why limit your income to what an old-style single-action loader, or any other limited-duty rig can earn you? Prove to yourself each big-capacity 4-in-1 action "doubles" for one or more special-duty machines—each action gives you an unlimited choice of working positions! See how only the clam-action 4-in-1 can multiply your ability to make money. Let your International Drott Distributor demonstrate!

5 Four-in-one sizes: ¾ to 3 cu. yd. capacity.



INTERNATIONAL DROTT

International Harvester Company, Chicago 1, Illinois

Drott Manufacturing Corp., Milwaukee 15, Wisconsin



PICK-UP "Surround" elusive loose materials without "chasing" them. Note this TD-6 Four-in-One. Just place open 4-in-1 over them, close the clam, and load!



BULLDOZE Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive "radius control"!



GRAB Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds!



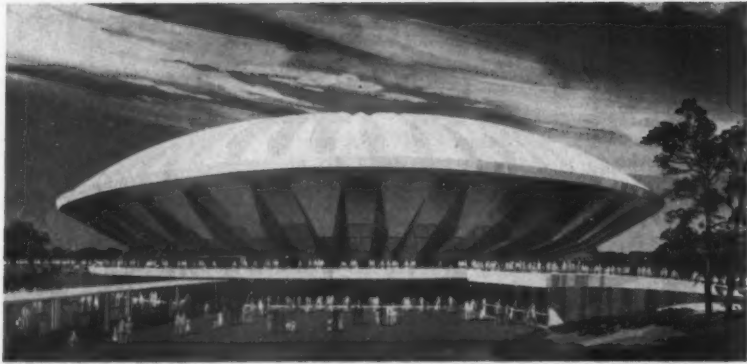
BOTTOM-DUMP End the sticky materials problem, for good! Opening the clam of this TD-15 Four-in-One pulls material from bucket surfaces—gravity pull does the rest!



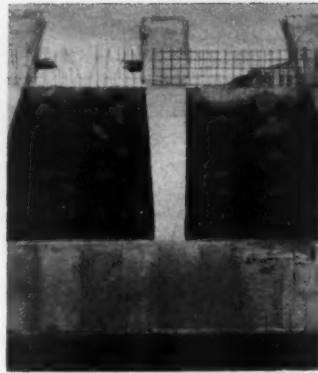
BACK-DRAG Pull down materials wholesale from the sand or gravel bank—and grade hard-to-get-at slopes with 4-in-1 back-drag action!



DO SHOVEL WORK Apply power-shovel-like 4-in-1 breakout power as this 3-cu. yd. TD-20 does—to dig up concrete slab, excavate hard materials.



This architect's painting shows how the University of Illinois Assembly Hall in Champaign, Ill., will look when completed late in 1962. Formwork was the most difficult part of the job for the 400-foot-diameter bowl and dome, which are supported by 505 miles of 3/16-inch tensioned wire around the equator. This wrapping will be done last; until it is finished, bowl and dome have to be completely supported by an extensive falsework system.



The foundation of the bowl is formed by buttresses that stem out from a 218-foot-diameter ring footing. Excavation of the circular trench for the footing, which goes down 15 feet, was handled by scrapers.

Forming problems with a covered concrete bowl

Contractors and Engineers staff article

Take two soup bowls. Turn one upside down and place it on top of the other. You now have the approximate shape of the University of Illinois Assembly Hall in Champaign, Ill.

Now take one contractor and put him between the two bowls. And where is he? He's in the soup.

He has problems a-plenty. He must build forests of falsework to support the sides of the bowl and the 400-foot-diameter concrete dome. He must form shapes that are as irregular as the top of a tossed salad.

So far, Felmley-Dickerson Co., Urbana, Ill., has been able to meet with ingenuity most of the construction problems on its \$6.5 million contract. But there was little it could do to

prevent the numerous strikes that have delayed the project.

In 1959, the national steel strike cut four months out of the work schedule. Twenty weeks of good working weather was partially lost in '60 because of strikes called by local carpenters, ironworkers, and electricians. Construction, begun in May of 1959, is now scheduled for a September, 1962, completion.

Wrapped in wire

This is a fantastic building. Built entirely of reinforced concrete, it will be held together by some 505 miles of 3/16-inch wire. The tensioned wire will ring the equator of the double bowl and prevent both the top and bottom bowls from collapsing. Wrapping the ring beam with wire is one

of the last steps of the construction. Until this is done, both the sides and the dome must be completely supported.

The lower bowl is of unique construction. Forty-eight buttresses stem out from a 218-foot-diameter ring footing. The individual buttresses rise up at an angle to meet a lightweight-concrete corrugated section. This corrugated section rises to a 400-foot-diameter ring beam. No columns support the sides of the bowl. The bottom of the bowl is about 25 feet below ground level.

Pleated dome

The inverted upper bowl is a pleated or folded-plate-type dome. Its surface is a geometric pattern of ridges and valleys. Composed of 4,000-pound

lightweight concrete, its normal thickness is 3½ inches. It is thicker at ridge tops and valley bottoms. The dome, rising 125 feet above the floor, is supported entirely by the rim of the lower bowl. There are no interior columns.

Rimming the structure at its lower level are two concrete floors. The upper floor is a concourse that allows people to get in and out of the Assembly Hall. The lower floor is devoted to offices and supplementary facilities. All of the upper floor and part of the lower floor are enclosed with a sloping glass and aluminum curtain wall.

The big covered bowl will have several functions. It can be used as a basketball court with permanent chair-type seating for 16,200 fans.



LOWEST COST DIGGING Begins With A Vermeer POW-R-DITCHER

If you want more ditch for your dollar, you can't beat the 524T POW-R-DITCHER... the lowest priced BIG ditcher on the market! Digs 8" to 24" wide at speeds of 1' to 15' per minute. Has 2-way dirt conveyor and hydraulically controlled steering with separate steering lever for each track. A self-propelled one-man operated machine that's ideal for contractors, municipalities, utility companies and institutions.

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Please send me FREE information and prices on the complete Vermeer line of self-propelled POW-R-DITCHERS

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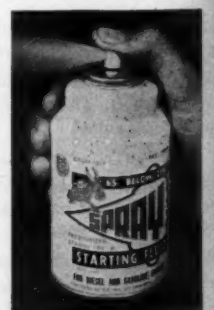


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THE ORIGINAL SPRAY STARTING FLUID*



Starts diesel and gasoline engines (from the smallest to the largest) down to 65° F. below zero • Starts in seconds • Excellent in humid weather too • Millions of cans sold • See your automotive jobber

*The inventors of spray starting fluid. Patent No. 2,948,595

Ask for the can with the "balky donkey" trademark

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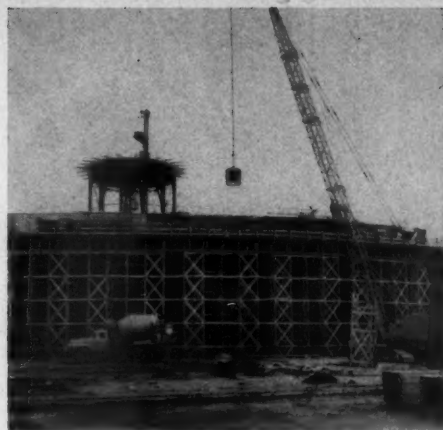
For more facts, circle No. 278

CONTRACTORS AND ENGINEERS



Timber towers support the flat valleys of the corrugated bowl as concrete brings the structure to half its height. A Koehring 545 Sprawler swings a 1-yard bucket from a Challenge 6-yard mixer on a Ford T-850 to the workmen. In the background is a 100-foot-high steel tower holding a 4-foot-thick compression ring.

◀ Before forming can start for the corrugated lower section, the two concrete floors that rim the building must be completed. In the foreground is a finished section of the second-level or concourse floor. When it is completed, crews will build the timber towers that rest on this floor and support the corrugation formwork.



For student convocations, commencement exercises, or speeches, the capacity can be raised to 18,000. For concerts and theater performances, the circular seating can be partitioned into a quarter section containing about 4,200 upholstered seats.

Designer of the \$7.5 million structure is Harrison & Abramovitz of New York City. Ammann & Whitney, New York City, is the structural engineer.

Scrapers dig trench

One of the first steps in construction was excavation for the 16 x 3½-foot ring footing. This was accomplished by scrapers moving dirt from a circular trench that went down about 15 feet. Although the center area has to go down about 12 feet below the footing, this ground will not be excavated until the building is nearly completed. The ground is left in place to allow the contractor to work on level dry ground, rather than in a wet hole.

After the ring footing was completed. (Continued on next page)



This is how the corrugated-bowl section looks from the top of the tower at the center of the structure. At right, carpenters set in trusses to form the plateaus of the corrugations. Plywood outlines the odd shape of the valleys. At center, ironworkers set steel on formwork; at left, a completed section.

12 Floors...90 Days



Symons Steel-Ply Forms in 20'x8' Gang Sections

... Re-Used 20 Times on 580 Unit Housing Project

McCarthy Brothers Construction Company, St. Louis, used Symons Steel-Ply Forms to gang form the Anthony W. Webbe Apartments, a public housing project in St. Louis.

Gang forming seemed obvious for this job, but quality of pour was most important. This was to be shear walls from the ground through the 12th floor. McCarthy worked with the Vernon L. Goedecke Company, St. Louis, and the Symons engineering department. Symons engineers recommended a ganged section 20' long x 8' high.

It took 25 days to pour the foundations on the 40 x 600 foot structure and approximately 90 pouring days to bring the building through the 12th floor... a total of 196,000 square feet of forming in the walls. 15,000 square feet of Symons Steel-Ply Forms were re-used approximately 20 times.

Complete housing project story available on request. Symons Steel-Ply Forms can be rented with purchase option.

NEW Bolt for Gang Forming



Permits the ganging of any size Symons Form with regular hardware. Now you can secure all the forms required, together in sections, move the sections in place, insert the ties and the unit is ready for a pour.

COMPLETE INFORMATION AVAILABLE ON REQUEST



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Warehouses Throughout the U.S.A.

MORE SAVINGS FROM SYMONS

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STATIONARY PLANT FEATURES...

STATIONARY PLANT CAPACITY

HIGHLY PORTABLE

EASY TO ERECT



The highly mobile 60-7 Ross Porta-Plant, the answer to the question of high portability, plus the advantages of a stationary plant. The 60-ton overhead storage can be increased to 105 tons simply by adding an additional bin extension. The plant will produce 100 yards of concrete an hour with the proper allied equipment.

ROSS PORTA-PLANT

ANOTHER EXAMPLE OF ROSS

LEADERSHIP!

BOX 446

PHONE ME 3-4356

BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 279



Crews work the concrete dumped from the bucket handled by the Koehring 545. The slump of the lightweight concrete was held between 1 and 2½ inches. Slopes, foreground, are so steep that containing forms must be used.



Crews bridge valleys and plateaus with steps formed with corrugated metal. The plastic blanket, foreground, protects the embankment, where steps will be added.



Beneath the bowl, timber towers of 6 X 6's rise to meet the sloping 3 X 12-inch stringers that support 3 X 10 joists. Wood trusses span the distance between the timber towers.

**"...we tried
out numerous
compactors
...results were
not satisfactory
until we tried
out your SPR-13
BMCO roller."**

SAN XAVIER
601 WEST 234th STREET • P.O. BOX 1031 • TUCSON, ARIZONA • TELEPHONE 285-835
February 24, 1959

Browning Manufacturing Co.
P. O. Box 2707
San Antonio, Texas

Gentlemen:

On our Freeway Job on Route 84 here in Tucson we had over a million tons of borrow to move and compact. This material was very sandy and full of rocks which made a very difficult compaction problem.

In order to solve this problem we tried out numerous compactors and rollers but the results were not satisfactory until we tried out your SPR-13 BMCO Roller. This machine was the best one to pull through this hard to roll material.

As a result of this trial we purchased three of the SPR-13's for this job.

Very truly yours,
SAN XAVIER ROCK & SAND CO.
By: *V.P. Stuart*
V.P. Stuart - General Manager

SPR-13

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Please send me complete information on the following BMCO Rollers: ☐ Vibrating
☐ Pneumatic Tired, Self-propelled ☐ Tow Type ☐ Steel Wheel (3-Wheel, Tandem)

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(Continued from preceding page)

pleted, the 48 buttresses were formed and concrete was placed. Wood forms and standard-weight concrete were used. The upper portions of the sloping buttresses end on a radius of 140 feet. From this point on up, the concrete is lightweight, and the forming is tricky.

At a construction joint, the buttress ends meet a solid corrugated section that rises to a ring beam. (It is this beam that is eventually wrapped with wire.) Both corrugated section and ring beam are placed as a unit.

The corrugations consist of a series of plateaus and flat valleys that rise upward and outward on a 2 to 1 slope. Since the dimensions of the corrugations vary with the distance from the center of the building, they are extremely difficult to form.

Timber towers support forms

Towers of timber shoring (6 X 6's and 4 X 4's) rise from the concourse floor to support the valley sections of the corrugations. To support the plateau sections, wood trusses span the distance between the timber towers. Supporting the outer ring beam is a closely spaced network of towers. This shoring must stay in place until the beam is wrapped with wire. The interior shoring can be removed and used on other parts of the building.

The towers rise to meet sloping 3 X 12-inch stringers that support 3 X 10-inch joists. Plywood is nailed to the joists to make the form. Forms



Ironworker sets steel for the parapet wall, an integral part of the 3 X 3-foot beam. The beam is outlined by the reinforcing.

CONTRACTORS AND ENGINEERS

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Framed by two of the 48 buttresses, foreground, is the 100-foot tower at the center. A cable-drawn bucket is pulled up the webbed post to dump concrete to a receiving hopper at top. Crews use a wooden stairway. The edge of the tower will support the ends of steel trusses that hold formwork for the dome. Dowel steel in the compression ring and in buttresses will be joined by a complicated pattern of concrete. A Koehring 330 supplies materials other than concrete.



A 15-degree steel truss that will span 130 feet between the central tower and the 72-foot-high wood tower at left is made up and most of the formwork is done while it is in this position at the base of the towers. It will be hoisted into place by hand winches. The wood tower will be extended to form a complete circle around the center tower. Spans of 70 feet will fill the gap between the wood tower and the bowl edge.

are broken down into their individual components and re-used many times. There is little opportunity for stripping and erecting the forms in large sections.

Lower portions of the corrugation slopes (45 to 85 degrees) must be formed on both sides to contain the low-slump, lightweight concrete. The greater portion of the corrugations, however, are simply formed on the underside and hand-screeded on the surface to a thickness of 7 inches.

A Koehring 545 crane stationed outside the structure buckets the concrete from transit-mix trucks to the forms. The concreting continues until concrete is placed for the combination ring beam and parapet wall. One corrugation—calling for about 50 cubic yards of concrete—is placed at a time.

After a number of corrugations have been completed, the men bridge the valleys with concrete steps and continue the steps across the plateaus. This gives the structure the appearance of a stadium. The steps are ingeniously formed with corrugated sheet metal. This leaves a hollow area underneath the steps that is used in part of the ventilation system for the building.

Steel tower for dome

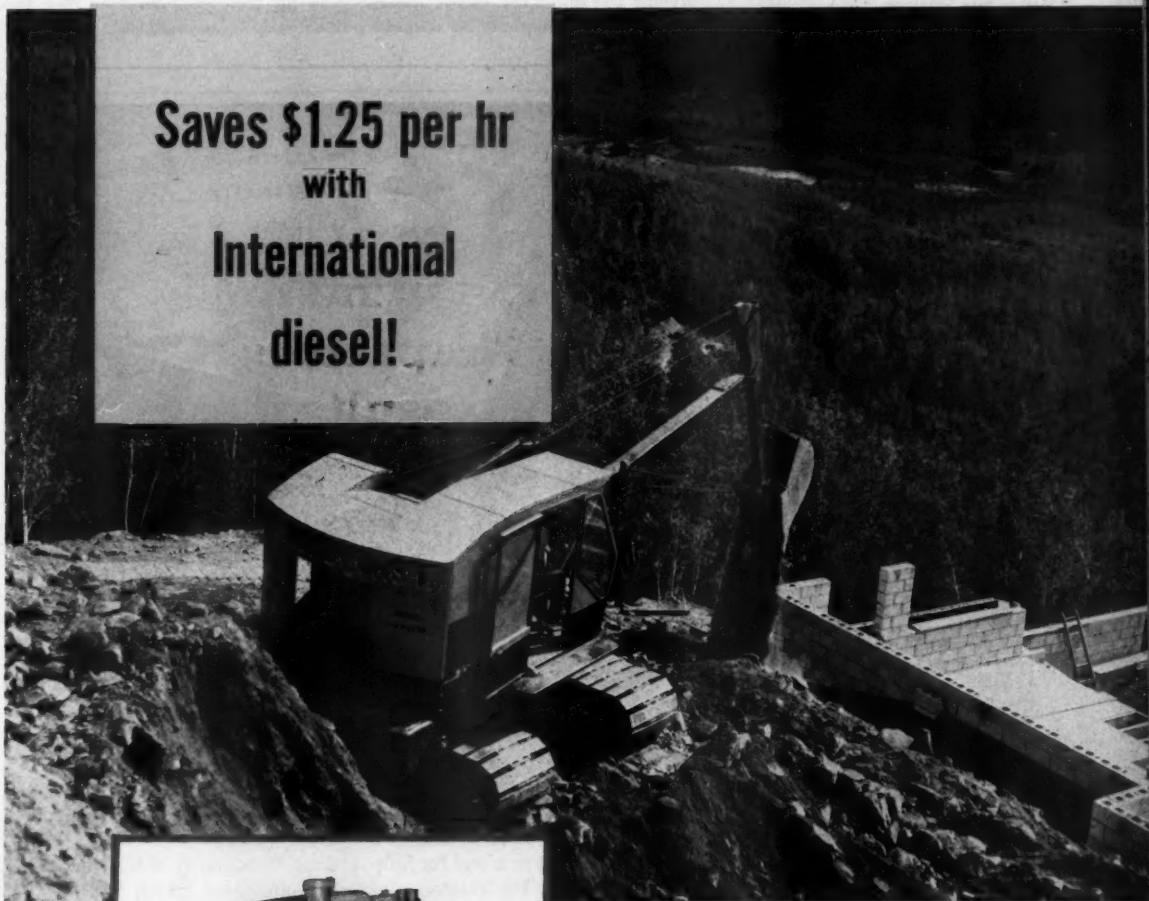
While crews were still forming up the corrugations of the lower bowl, the contractor started preliminary work for the dome. Ironworkers erected a 100-foot-high structural-steel tower at the center of the circular building. Its top served as a platform for concrete placement for a heavily reinforced compression ring. The doughnut-shaped ring has an outside diameter of 43 feet. It is 4 feet thick. The outer edges of the steel tower support the ends of the steel trusses that carry the formwork.

Near the center of the tower is an arrangement for hoisting concrete to the top. A cable-drawn bucket rides up a webbed steel post to a receiving hopper about 10 feet above the top of the tower. This device was used for concrete placement for the compression ring. It will also be used to supplement cranes in placing concrete for the dome.

After the center tower was erected, carpenters built a second support for the dome formwork. Located 130 feet out from the center tower, it is 72 feet high and built of three rows of cross-

(Continued on next page)

**Saves \$1.25 per hr
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International
diesel!**



"This economical engine is the difference in making money or breaking even on some of our close jobs!"

—Merrill Construction Co., Carbondale, Colo.

This engine is paying off fast, delivering smooth, dependable power at 7,000 feet elevation for Merrill Construction Co. "This IH diesel burns one gallon of 18.9¢ fuel per hour against 4.5 gallons of 32¢ gasoline for the old engine—that gives us terrific savings," says Mr. Merrill, who re-powered his 350 Bantam backhoe with an International UD-236. "We figure costs very close, and in some cases this economical engine is the difference in making money and breaking even!" Hourly costs figure out to savings of \$1.25 on this job, or \$12.50 for a ten-hour day. That's a helpful edge for bidding on the close ones!

Back up your bids with dependable, low-cost International power. There are 35 diesel and car-

bureted engines in the International line—16.8 to 385 max hp. All models are available as stripped engines or complete power units. For complete product information and installation assistance see your International Engine Distributor or Dealer.

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A COMPLETE POWER PACKAGE

For more facts, use Request Card at page 18 and circle No. 282

(Continued from preceding page)

braced 6 x 6's. Like the rim of a wheel, it forms a complete circle around the center tower.

Steel trusses support forms

Spanning the distance between the center and circular towers are specially built steel trusses. Similar trusses span the 70 feet from the circular tower to the edge of the lower bowl. The trusses support the wood forms for the pleated dome.

Most of the forming, however, is not done at roof level. The trusses are decked with 2-inch lumber fairly close to the ground. The trusses are made up in 15-degree pie-shaped sections. Vertical and diagonal wood members



Dick Foley, left, manager of contractor Felmley-Dickerson's Champaign office, and Ed Maliskas, super for the work, talk over job progress to date.

sprout up from the wood decking to provide the odd shape of the ridges

and valleys. Strips of plywood are nailed to the wood members. But the plywood is not the form. On top of the plywood are placed 2-inch-thick planks of Insulrock, a compressed mixture of excelsior and cement with good insulating properties. The Insulrock serves as the form and becomes the finish surface of the underside of the dome. A sprayed-on vapor barrier tops the Insulrock, which is held to the concrete with clip anchors and acts as an acoustical ceiling.

Forming roof on ground

With the exception of placing the Insulrock, all the form work is done with the 15-degree section close to the ground, directly below its position in the roof. Four hand winches, two

on the circular wooden tower and two on the center steel tower, raise the form sections into place.

In placing the lightweight concrete for the roof, one 15-degree pour must be balanced on the following with a diametrically opposite placement before adjacent leaves are completed. Felmley-Dickerson has enough forms to make up six 15-degree sections. Each section can be broken into four pieces and shifted to a new location.

A typical cross section of the completed roof between the ridges and valleys consists of 2 inches of Insulrock, 3½ inches of lightweight concrete, and a Hypalon sprayed-on plastic waterproofing.

When the roof is completed, the ring beam of the lower bowl will be wrapped with tensioned wire. At the present time, the roof is still supported by the center and intermediate towers, and the edge of the lower bowl is still held up by wooden towers.

In the final stage, the 3/16-inch steel wire will be pulled to a tension of 120,000 psi as it is wrapped around the 400-foot-diameter ring beam. The total number of wires forms a cross section 85 square inches in area. After the wires are in place, they will be encased in concrete for protection. The wrapping operation will be done by the Preload Co., Inc., of New York City.

Personnel

R. C. Dickerson is president of Felmley-Dickerson Co. R. H. "Dick" Foley, manager of the Champaign office, keeps a close watch on the job. E. G. "Ed" Maliskas is superintendent. The field representative for Harrison & Abramovitz is W. S. Posten. The university architect is E. I. Stouffer. Ben W. Maxwell is the university project architect. **THE EN**

Construction conference proceedings in book form

The Cleveland Engineering Society has released the proceedings of its ninth annual construction conference. The conference, entitled "Construction Horizons," presented practical sessions on various areas of the construction field.

Included in the proceedings book are papers of 13 different sessions, which featured 27 speakers.

The book is available from the Cleveland Engineering Society, 3100 Chester Ave., Cleveland 14, Ohio, at a price of \$2.

Charles Bruning appoints

The Charles Bruning Co., Inc., Mount Prospect, Ill., has made several new appointments.

Edwin C. Bruning, previously national warehouse manager, has been named promotion manager for the western region, in Los Angeles.

W. E. Boyd has been appointed manager of Bruning's Montreal office and Jack W. Hanks, sales supervisor in the Detroit area. Donald J. Dickinson was promoted to sales supervisor in the Dayton, Ohio, area.

CONTRACTORS AND ENGINEERS

NEW FROM ULRICH



STRAIGHT BLADE



ANGLE BLADE



FORWARD "V" BLADE



REVERSE "V" BLADE



TILT BLADE

VARIDOZER

NOW ONE BLADE DOES ALL JOBS

Introducing a new tool for fully utilizing the capacity of the New Cat Series B D6 Tractor... the revolutionary Ulrich VARIDOZER... the one blade for ALL dozing operations on any job.

In seconds you can change the VARIDOZER from a straight blade to a tilt blade, angle blade, forward "V", reverse "V", or any combination of these many useful positions. The sturdy hinge and positive hydraulic push arm action make possible fast blade changes... under full load or empty... while the machine moves in either direction.

Finger tip control of the rugged VARIDOZER blade at all times makes it possible to place material where you want it... easier, faster, cheaper.

So versatile that the D6 equipped with a VARIDOZER blade has been doing jobs that have normally been considered the work of larger conventional dozers or other heavy-duty special equipment... and many other jobs you never thought possible with a dozer... doing them faster and better.

The only way that you can fully appreciate the productive advantages of the VARIDOZER blade is by seeing it work on your own job. Ask your Ulrich-Caterpillar Dealer to put a VARIDOZER on your job today.

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For more facts, use Request Card at page 18 and circle No. 283

New office building for Hyster in Portland

Hyster Co. is constructing a new general administrative office building at its headquarters plant site in Portland, Ore.

The 2-story building, containing 20,000 square feet of floor space, will house executive offices; accounting, general parts and service, and general sales departments; conference rooms, an auditorium, photography workroom, duplication and literature storage facilities, and an IBM department.

The company is also constructing a 2,500-square-foot boiler room and manufacturing addition, separate from the office structure.

The project is expected to be completed in April. Hyster's Portland plant offices, along with the engineering department, will remain in the old office building. Hyster manufactures industrial trucks, heavy-duty trailers, and tractor equipment.

Inland Steel announces equipment-rental plan

Inland Steel Products Co., New York, N. Y., a wholly owned subsidiary of Inland Steel Co., has announced that a new equipment-leasing plan will be made available to customers of its Metal Buildings Division through the firm's distributors throughout the U. S. The division produces prefabricated steel buildings for all commercial uses.

Talcott Leasing Corp., a subsidiary of James Talcott, Inc., will supervise the plan. Talcott will purchase the buildings from Inland and lease them to users, without recourse to the dealer. The lessee will have no large initial outlay and no equity tied up in the units. When the lease expires, the lessee may continue to rent the buildings for an annual sum, or purchase them outright. Several rental plans will be made available.

B-S promotion

The Buffalo-Springfield Co., Springfield, Ohio, a division of the Koehring Co., has promoted Glen E. Moore to the position of assistant general sales manager.

Moore will assist the sales vice president in activities related to the sale of rollers and drill equipment in the domestic market and drilling equipment in the export market.

Buffalo-Springfield manufactures compaction equipment and water, oil, and blast-hole drills.

Atlas Powder closes plant

Atlas Powder Co., Wilmington, Del., recently closed its Senter dynamite plant located near Houghton, Mich.

The closing of the plant was the final phase of Atlas' plans to consolidate its explosives manufacturing facilities at fully integrated ammonium-nitrate and dynamite plants in Missouri and Pennsylvania, and to reorganize its explosives distribution system.



MORE THAN 10,000 POUNDS OF STAINLESS STEEL now reinforces the dome of the U. S. Capitol Building, shown here undergoing the first major renovation in its 100-year history. To safeguard against corrosion, stainless-steel bolts, plates, flashing, and cable were used in repairing deteriorated areas inside the dome. Expansion joints, also stainless steel, were used to repair cast-iron railings that had buckled or cracked. The scaffolding at left was erected to minimize loads on the upper part of the dome while work was in progress.

THEW LORAIN MOTO-CRANE



SEAGRAVE FIRE TRUCK



HENDRICKSON TRUCK CRANE



FWD LINE TRUCK

Whatever the job...

New G-21 Series Valves

cut costs on

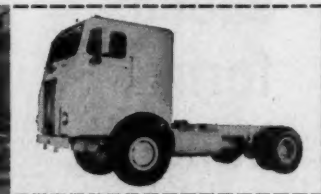
Garrison
POWER STEERING!



KENWORTH TOWING TRACTOR



WHITE FREIGHTLINER



- HEAVY DUTY VEHICLES
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- OFF-HIGHWAY TRUCKS
- TRUCK CRANE CHASSIS
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Garrison now offers a new line of low cost, hydraulic power steering valves and cylinders! The G-21 Series cuts power steering costs because you don't pay for something you don't need... no waste in over-design, excessive materials, unnecessary labor. G-21 Valves now complement existing Garrison designs and permit proper selection of the most economical valve for any job, based upon vehicle usage, engine horsepower, axle loading and steering design linkage. Here's custom-designed performance with standard valves at important savings to you!

Garrison, originators of the "divided linkage" system of power steering, incorporates patented hydraulic reaction in all valve designs resulting in proportionate "feel", greater stability, excellent recovery and smooth, reliable performance. Furnished as standard equipment on many types of wheeled vehicles by major manufacturers, also available in kits for adaptation to existing equipment.



WHITE 5000



KW DART TANKER

Whatever your
steering application...
Get **POWER**
with **GARRISON!**



4609 East Sheila Street, Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 333



Excavation from a section of the Inner Loop in Rochester, N. Y., is loaded out to an Autocar dump truck by a Koehring shovel with 2½-yard Esco bucket.



No problem in wasting excavation

A \$3,475,000 contract for an 8½-mile segment of the Inner Loop, a highway that will ring the downtown area of Rochester, N. Y., makes this section the most expensive piece of road construction per mile in this area.

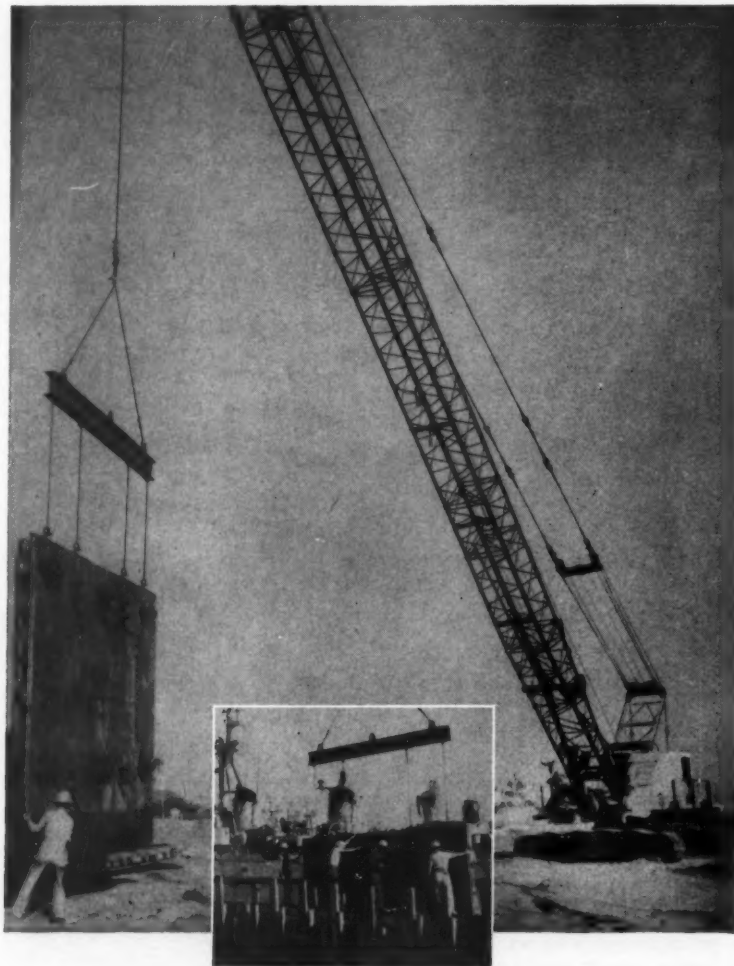
Johnson, Drake & Piper, Inc., Minneapolis, holding the fifth of six contracts for the loop, has a complicated job. This section not only runs through the heart of the city, but it is also depressed in three sections east of the Genesee River, where street-level service roads will run along each side.

Efficient waste disposal

Over 470,000 cubic yards of earth has to be excavated to cut out the depressed highway. And all of this material has to be wasted—virtually an impossibility in a built-up business section of a big city. But an early over-all view of the job and planning by the New York State Department of Public Works made an "impossibility" feasible.

A circumferential highway, to be known as the Outer Loop, is now in the planning stages and probably will not be under contract for at least a few years. The state, however, included a 1.85-mile section of the Outer Loop in the Johnson, Drake & Piper contract so that the firm could dispose of about 320,000 cubic yards of surplus material along an area that will require fill. The only work to be done on this 1.85-mile Outer

Building a 2100-foot-long wharf for Mayport (Fla.) Naval Station, AMERICAN 40-ton crane lifts and spots 14 x 22½-ft. concrete forms in a matter of seconds. The AMERICAN also handled pile driving duty on this job... set up to 70 piles per shift, at minus 21 ft. grade.



speeds
form
handling
400%

To sidestep the need for building concrete seawall forms in 3 feet of water, this contractor prefabricated his forms on dry land, then "airlifted" them into position, as shown above. Operating schedule: 250 feet of wall per week... an estimated four times faster than if forms had been built-up in muck and water.

Placing of these billboard-size forms (which made nice targets for blustery ocean winds!) demanded a sharp crew and a top-notch crane. The AMERICAN 500 Series crane provided the reach (95-ft. boom), capacity (40-ton), and stability needed for this job. Ultra-smooth air controls... controlled boom lowering... crawler side frames that extend to 13'10" width for greater stability... all helped make this ticklish job a matter of routine.

Chances are, an AMERICAN crane can make time and money savings on your jobs. See your AMERICAN distributor... talk to other AMERICAN owners. Then you be the judge.

CC-716

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EXCAVATORS
½ to 4½ yds.

CRANES
12½ to 110 tons

DERRICKS-HOISTS
to 800 tons

REVOLVER CRANES
to 400 tons

FORGED FITTINGS
FOR WIRE ROPE
AND CHAIN
(Crosby-Laughlin Div.)

For more facts, use Request Card at page 18 and circle No. 334



The 18,000 yards of concrete for the retaining walls and structures and the 13,000 yards for the 8-inch roadway base is being turned out by a Blaw-Knox plant at the midpoint of the job. Roadways will be surfaced with 2½ inches of asphaltic concrete.

CONTRACTORS AND ENGINEERS

job helps another; waste excavation from Outer Loop job is dumped by a Mack truck. A Cat D8 tractor-dozzer spreads the material. Makes for an economical disposal operation and puts the Outer Loop job ahead.

Loop section is the construction of culverts under the fill and the installation of drainage lines.

Bridge rebuilt

Also included in the JD&P segment is the reconstruction of the Genesee River Bridge at Central Avenue for incorporation into the Inner Loop. The Inner Loop crosses the Genesee River twice. The Howell Street Bridge, nearly 1,200 feet long, was constructed under an earlier contract. Four more bridges will be built to carry St. Paul, Clinton, and North Streets, and Joseph Avenue, across the depressed stretch of roadway.

In the reconstruction of the Genesee River Bridge, the contractor is working on one-half of the bridge at a time in order to maintain traffic across the structure. After removing the superstructure along the south half, crews cut down the existing concrete piers. This allows new pier caps to be built up on the existing piers for the new superstructure. Once the superstructure is erected, the 2-way traffic will be rerouted onto it, and the process will be repeated along the north half of the bridge.

Included in this project, but under another contract awarded to Verona Contracting Co., Verona, N. J., is a \$1.2 million sewer tunnel 40 feet to 60 feet below the surface. This tunnel, constructed out of solid rock, is about a mile in length and 9, 10, and 11 feet in diameter, and will drain the depressed highway. (See page 48.)

Personnel

Earl Maurer is the superintendent; George Daniels, the assistant superintendent; and Simon Kootte, the office engineer for Johnson, Drake & Piper. B. W. Hoadley is the resident engineer for the New York Department of Public Works. **THE END**

Three join Heil Co.

Three of the key men associated with Load Lugger and Huge Haul detachable container systems have joined the Heil Co., Milwaukee, Wis. Heil recently purchased these lines from the Ingersoll-Kalamazoo Division of Borg-Warner Corp.

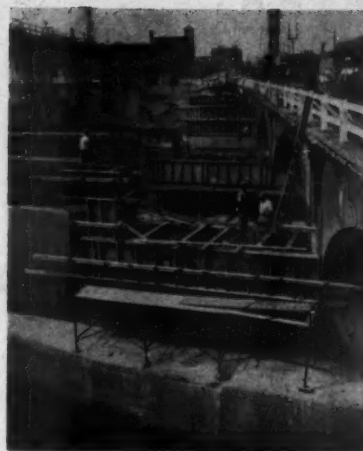
A. M. Klinger, who has been associated with Load Lugger and Huge Haul since 1955, will continue as sales manager of material-handling products.

L. F. Sexton has been appointed chief design engineer of these products. He has been with The Brooks Mfg. Co., originators of the Load Lugger system.

George Palmer, previously design engineer at Ingersoll-Kalamazoo, will continue in that capacity for the Heil Co.



Backfill compaction around 60-inch-diameter drainage pipe that will be covered by fill in the Outer Loop segment is handled by an Ingersoll-Rand portable compactor. The Bucyrus-Erie backhoe on the berm handles ditch excavation.



The south half of the Genesee River Bridge is being reconstructed by cutting down piers and building new pier caps for the new superstructure. Two-way traffic is maintained on the north half of the bridge. At this point, crews are preparing pier-cap formwork.



The mild steel sleeve is shown welded around the ripper shank. When badly worn it is easily replaced with a new sleeve.

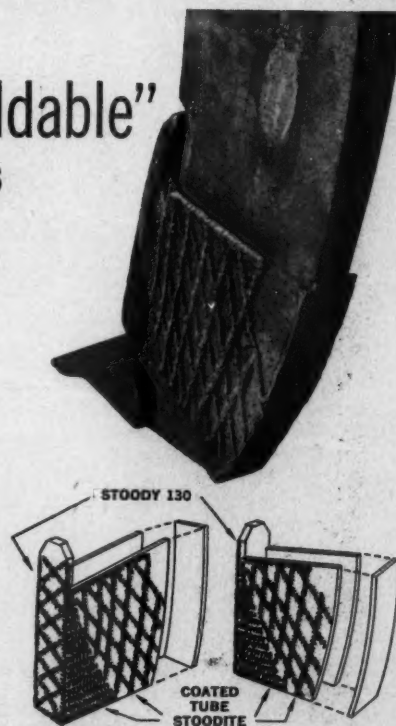
HARD-FACING "Non-Weldable" RIPPER SHANKS

A simple method for hard-facing non-weldable high carbon ripper shanks now extends shank life almost indefinitely! Solution is a fabricated sleeve tightly fitted around the shank to which the hard-facing is applied. Side and back sleeve panels are cut from 1/2" mild steel plate. The front panel is 1" plow steel. After strength welding sides to front panel, the unit is slipped around the shank and the back panel welded in place.

Front faces of the sleeve and replaceable ripper tooth are protected with Stooddy 130—a semi-automatic wire containing tungsten carbide particles—extremely resistant to abrasion. Since sleeve sides receive less wear they are adequately protected with Coated Tube Stoodite—a high-alloy manual electrode.

Occasional hard-facing touch-ups keep the sleeve in good condition. When further reclamation becomes impossible a new sleeve is easily installed. Thus, little actual wear ever reaches the ripper shank itself. The replaceable tooth is rebuilt and hard-faced, as required.

This is only one of the hundreds of ways to cut maintenance costs and lick downtime with Stooddy alloys. For more cost-cutting suggestions, see your Stooddy Guide Book—the original and best guide to equipment maintenance! Ask your Stooddy Dealer (check the "Yellow Pages" of your phone book), or write direct.



STOODDY COMPANY
11904 East Slauson Avenue
Whittier, California

For more facts, use Request Card at page 18 and circle No. 284



POWER C 'PULL' gives you these production advantages:

TOP POWER/WT RATIO: The LeTourneau-Westinghouse C Tournapull® is powered by the GM 8V-71 diesel engine producing 270 hp. Combined with "C's" light weight, each "horse" moves only 326 lbs of total loaded weight. That's almost 71 pounds less than the average for all single-engine scrapers in this class. You accelerate 20% faster, complete cycles in less time.

EASIER OPERATION: Exclusive LW electric-control system gives you positive, *instant-response* control of steer, tailgate, apron, and bowl lift. It's the easiest-to-operate, easiest-to-maintain system of all... and 100% weather-proof.

FASTER LOADING: Fullpak® scraper has been proven to load a *greater* percentage of its heaped capacity than any other unit on the market. Low-angle loading, with wide entry for dirt... 20 yd heaped, 14 yd struck.

GREATER SAFETY: C'Pull gives you biggest brakes in the industry (3,764 sq in.), excellent visibility, and electric power steer that is never hampered by the operation of any other controls.

LOW OPERATING COSTS: You save money *every work day* because of "C's" simple, rugged design, easy accessibility of component parts, minimum of lubrication points, and low requirements for fuel, cable, oil, and tires.



**More reasons why
C 'Pull moves more
dirt at less cost:**

LW Power-Transfer

Differential — automatically transfers power from slipping drive wheel to wheel on firmer footing, keeps production high on soft, slippery terrain, on slopes and curves.

Power saving features — special radiator fan needs 7 hp less than other types. Drive train is short-coupled, runs on anti-friction bearings. Electric controls use power only when operating.

More maneuverability — electric kingpin power steer can U-turn C Tournapull in less than its own length, for fast, easy maneuvering in tight quarters, narrow haul roads.

Interchangeability — convert from 20-yd scraper to 22-ton rear-dump hauler in a matter of hours... C prime-mover earns bigger profits.

Unequalled experience — because of the experience gained in designing, engineering and building C Tournapulls over the past 20 years, today's V-Power C 'Pull is the most up-to-date, fully job-proved scraper on the market!

Let us show you the V-Power C 'Pull in action. See for yourself how it can cut your costs, help you make bigger profits. See us soon.



**There's a 'Pull
to fit
every job**

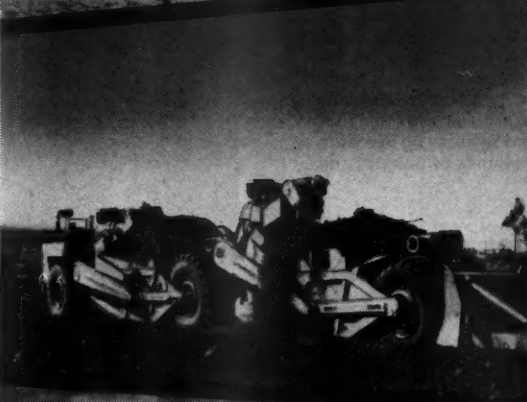
LW Speedpull®

For top-performance on long-haul assignments. 276 hp, 20-yd heaped capacity, 37.7-mph speeds, exclusive Hydair® suspension, best power-to-weight ratio, many other LW advantages.



LW V-Power B 'Pull

Puts more production, new profits into big-scraper dirt-moving with: More power... 430 hp. New speed... up to 28.3 mph. New capacity... 23 yds struck, 29 yds heaped... 58 yds in tandem.



LW Tandems

With LW electric-control system you can use two scrapers behind any 'Pull prime-mover... double your load capacity at only 30% extra cost! Plug-in jacks, and simple swivel hitch let you add or take off second scraper in a matter of minutes.



LW D Tournapull

Money-maker on any size job with standard 9-yd LW scraper... or with 10-yd Hancock elevating scraper (shown). 143 hp... choice of constant-mesh or torque-converter transmission... speeds up to 30 mph.

*Trademark CP-2370-DC-2



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

for more facts, use Request Card at page 18 and circle No. 285



Asbestos-asphalt is being laid for a test strip in Delaware by a Barber-Greene finisher. A Buffalo-Springfield 10-ton, 2-wheel tandem roller is handling the initial compaction.

A test for a thin m a

A 3,000-foot stretch of pavement on U. S. 13, north of Smyrna, Delaware, promises to be the most looked-at piece of road in that state for the next few years. Designed to determine the performance advantages and fu-

ture maintenance needs of various thicknesses of asbestos-asphalt, one of the newest developments in asphalt paving, the strip incorporates 1,000 feet of paving in which the binder has been reduced to 1 1/4 inches and the wearing course to 1 inch, giving a total thickness of 2 1/4 inches, 3/4 inch thinner than that normally used in Delaware.

Asbestos fiber

Delaware Roads Co., Middletown, Del., a subsidiary of Warren Bros., produced the paving mix and laid the pavement. The asbestos fiber for the tests was produced by Johns-Manville, which has for some time been conducting an intensive research program with asbestos-asphalt paving. J-M's program has indicated that asbestos-asphalt mixes, containing up to 3 per cent of asbestos fiber, give a tougher road surface, produce less brittleness at low temperatures, provide increased resistance to weathering and concentrated loading at high temperatures.

The State Highway Testing Laboratory is conducting the tests to determine if the results of the research program hold true for local road conditions and local aggregates, and for conventional thicknesses of binder and wearing course, and if these advantages will allow for a reduction in paving thickness without sacrifice of quality.

Test section

Tests are being made on a widening and reconstruction project where the average daily traffic consists of 9,750 passenger cars and 3,111 commercial vehicles. The original portland-cement concrete pavement was constructed in 1931 and widened in 1947. The test strips were laid on the travel lane in an area judged to have the worst subgrade conditions of the project.

The 3,000-foot strip began at the south end with 1,000 feet of standard binder, having 4.7 per cent asphalt content, followed by about 700 feet of asbestos-asphalt binder containing 2.9 per cent asbestos fiber and 7.5 per cent asphalt. Standard 1 1/4-inch thickness was laid. This was followed by about 1,300 feet of asbestos-asphalt binder, 1,000 feet of which was reduced to 1 1/4-inch thickness, containing 2.9 per cent asbestos and 7.0 per cent asphalt. The changes in thickness from 1 1/4 to 1 1/4 inches and back to 1 1/4 inches at the end of the test area were gradual.

Overlay

The overlay on these various binder courses consisted, in the south to north direction, of 1,500 feet of asbestos-asphalt, containing 7.0 per cent asphalt and 2.9 per cent asbestos, followed by 500 feet of standard mix containing 5.5 per cent asphalt, both in the conventional 1 1/4-inch thickness. This was followed by about 1,000 feet of asbestos-asphalt overlay reduced to 1-inch thickness and con-

VICTOR

FLUX GRINDER

reclaims 85-90%
of flux used in
track rebuilding

Why pay outsiders 4-5¢ a pound for regrounding flux used in automatic rebuilding, and lose 1/2 of it in the process? With a low-cost Victor flux grinder you reclaim 85-90% and it comes out sized to factory specifications. Magnetic separator removes spatter and other tramp metal. The Victor grinder processes 1500 pounds of fused flux hourly, and requires no operator. Savings on reclaiming 12,000 pounds of flux pays off your initial investment.

Recondition grouser shoes and track sprockets automatically

With this Victor grouser shoe/sprocket reconditioner, you can: (1) Load grouser pad, trim, weld on new shoe, and unload it in just 11 minutes; (2) completely recondition worn sprocket, including trimming and welding new rings onto hub, in less than two hours. Controller permits manual, semi or fully automatic welding.



If you rebuild track rollers, idlers, sprockets, rails, grouser bars, track shoes, or weld by submerged arc, you can slash flux reclaiming costs with this Victor flux grinder. Requires only 30" x 66" floor space.

"Paid for itself in six months," reports one user.

One source responsibility

Everything you need for rebuilding track assemblies—the two machines shown; also roller and idler rebuilders in two sizes, track link rebuilder, grouser bar welder; automatic, continuous-coil, hardfacing wire; plus prompt parts and repair service—yours from one source, your Victor dealer. Call him for complete details, or write us for descriptive literature.



Mfrs. of roller and idler rebuilding machines; high pressure and large volume gas regulators; welding & cutting equipment; hardfacing rods; blasting nozzles; cobalt & tungsten castings; straight-line and shape cutting machines



VICTOR EQUIPMENT COMPANY

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J. G. Menzies & Co., Wholly-Owned Subsidiary

For more facts, use Request Card at page 18 and circle No. 286

asbestos-asphalt paving

of various asphalt, one in asphalt rates 1.00 the binder inches and h, giving es, 3/4 inch ly used in

liddletown ren Bros. and laid the per for the Johns-Man- time been research asphalt par- cated that taining up er, give a duce im- ures, pre- weather- g at high

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taining 7.0 per cent asphalt and 2.9 per cent asbestos fiber.

The motorist proceeding north in the slow lane will first be riding on asphalt paving of conventional thickness. He will then drive over a section of asbestos-asphalt overlay on conventional binder, followed by a section of asbestos-asphalt overlay and binder in which the asphalt content of both layers has been raised over that of normal mixes. He proceeds to a short section of standard overlay that covers asbestos-asphalt containing 7.5 per cent asphalt for about 200 feet and 7.0 per cent asphalt for the remaining 300 feet. He then slopes down to the final thin test section having a 1-inch overlay and a 1 1/4-inch binder, both containing 7.0 per cent asphalt and asbestos.

Mixing and laying of the test paving were both accomplished by the standard equipment normally used by Delaware Roads Co. The Texaco asphalt used in the design mix was 70/85 penetration. About 15 tons of grade 7M06 asbestos fiber was used in the project. Other mix components were rigidly controlled so that the sand and stone were uniform for the entire strip.

Mixing

Basic components were introduced into the pugmill from bins. The asbestos fiber was added to the mix through a wooden hopper. A 100-pound bag was used for each 3,500-pound batch, giving a consistent 2.9 per cent content to all the asbestos-asphalt used. An additional 5 seconds of mix time was arbitrarily chosen to assure that the asbestos would be uniformly distributed throughout the mix. Mixing time was 75 seconds for binder mix 1 and 2 and the overlay.

The only visual change in the mix as it came from the pugmill was a drier, slightly fluffier appearance, and each batch filled a waiting truck higher than usual. The screed height on the Barber-Greene paver was raised 10 to 15 per cent to assure that the desired final compacted thickness of paving was obtained. Two Buffalo-Springfield rollers were used, a 10-ton 2-wheel tandem for first rolling, followed by a 12-ton 3-wheel tandem for final compaction.

Rolling of the materials gave a good tight pavement, and there was no excessive pushing or tearing. The unusual dense black color of the asbestos-asphalt was attributed to the higher asphalt content, which was as high as 7.5 per cent in a section of binder course. In spite of the high asphalt content, there was no indication of bleeding or slicking.

Present during the paving procedures were representatives of the Bureau of Public Roads, Bituminous Concrete Association, Johns-Manville, Texaco, Warren Bros., and the city of Philadelphia.

Additional laboratory flexural-

strength tests on asbestos-asphalt indicated that a 20 to 25 per cent reduction of thickness would give the same basic laboratory properties as standard thicknesses of standard mixes. With the greatly increased resiliency, flexural strength, and a decrease in cold-weather brittleness, it is possible that reflective cracking, a common occurrence with asphaltic overlays on badly cracked concrete, may be minimized.

The program will be followed

through with constant visual examination and periodic test cores that will be taken after the road has been in service about two years.

THE END

Asbestos was added to the pugmill of the asphalt plant through the wooden trough. One bag, containing 100 pounds of 7M06 asbestos fiber, was added to each batch.



THESE OWNERS AGREE, YOU GET

extra work-power with **POWER-Flow**



In just 2 months, all widening, grading, paving, curb-and-gutter work had to be completed on 1/2 mile of highway near Lansing, Mich. Milbocker & Harris brought in 3 LeTourneau-Westinghouse 9-yd D 'Pulls', Tournatractor® and POWER-Flow 660 grader. The 190-hp "660" handled all right-of-way maintenance so 'Pulls' could keep hauling at fastest practical speed. "Easily completed work on schedule," reports R. Milbocker.

Grading site for new shopping center, A. S. Holmes & Son, Inc. of Oakland, Calif., put both ends of this POWER-Flow 550 to work with an Ateco Ripper on the rear, and an LW bulldozer on front. Torque converter efficiently applies the machine's 145 hp to grading, ripping, back-filling. Power is automatically adjusted to work-load through infinite power-speed ratios in 4 forward speed ranges to 26.4 mph... 4 reverse to 23.5 mph.

"Does a good 1/3 more work than our other-make grader." That's what Jim Smith, co-owner of Scott and Smith Construction Co., Salem, Ky., has to say about their 190-hp POWER-Flow 660. There's a good reason for this. With the LW friction-free drive-train, power loss is practically nil. You get more thrust at the blade... cut deeper... spread bigger loads faster. Speeds: up to 27.4 mph forward, 24.4 mph reverse.

City streets and gravel roads around Calgary, Alberta, Canada, are on work-assignment list for this 660 POWER-Flow grader. Here the 190-hp machine is scarifying hard-packed street prior to rebuilding. Operator W. Bellingham says, "This unit has plenty of power and very good visibility. I've been operating motor graders for about 7 years, and in my opinion, LW graders are the best!"

Make your next grader an LW! POWER-Flow models: 145 and 190 hp with torque converters. Straight-shift models: 85 to 160 hp with constant-mesh transmissions. Ask for a demonstration.

*Trademark G-2320-DCJ-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

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Common sense, a good crew,
and the right equipment help to

Drive a drainage tunnel under busy city streets

An average 8-hour advance of 35 feet is made by tunneling crews working, under busy streets, on a heading of the 1.06-mile drainage tunnel that is part of the Inner Loop project of Rochester, N. Y. A helper is holding Sandvik-Coromant integral drill steel as an Atlas Copco Lion rock drill begins a new 1½-inch-diameter hole.

Driving more than a mile of drainage tunnel under the heart of Rochester, N. Y., during regular business hours could cause a contractor plenty of trouble, especially when he consistently shoots five big rounds a day.

Verona Contracting Co., Inc., Verona, N. J., the contractor on this \$1,263,081 assignment received no complaints while the tunnel was being driven beneath business offices, tenements, city streets, and other drainage lines. Already completed was a 243-foot-long and 8-foot-diameter outfall tunnel, running below the New York Central yard and emptying into the Genesee River.

Top production

Max "Cotton" Dean, Jr., Verona's project manager supervising a 13-man tunnel crew was running ahead of schedule, with an average 35-foot advance during single daylight shifts. This job is part of the Inner Loop project in the downtown area of Rochester. (See page 42.)

Runoff through the Inner Loop includes both storm water from the expressway and some sewage. However, the prime function will be to drain the city's depressed Inner Loop roadway area, parts of which are below the level of existing tunnels. Other runoff will come from Rochester's Baden-Ormund slum-clearance project.

The drainage project, requiring work 60 feet below the city streets in dolomite limestone, called for sections of 9, 10, and 11-foot-diameter tunnel. The pitch of the system is 4 inches per 100 feet, with a maximum runoff rate of 45,500 cfm.

Five rounds a day

Total tunnel excavation over the 1.06-mile system involved over 14,900 cubic yards of rock.

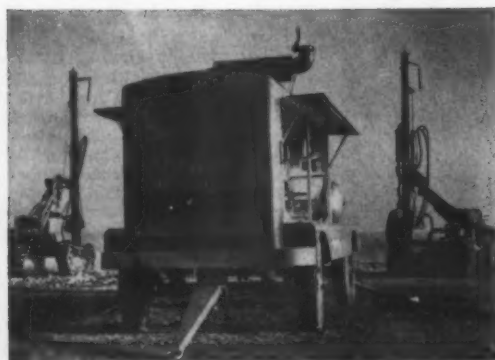
Working on a double heading, Verona's men completed five rounds



TOUGH ROCK. On this Rocky Mountain excavation nearly all of the rock was badly fractured and schisted as well as being highly abrasive.

Bits lasted an average of only 15 feet. This job was done with crawler drills powered by a battery of Jaeger "600" compressors.

Jaegers cut air costs on tough 1,300,000 cu. yd. Rocky Mountain excavation



A Jaeger rotary "600", using the same GM 6-71 diesel engine as used in other "600" rotaries, delivers its rated capacity at 100 rpm slower speed — 1700 instead of 1800. In an 8-hour full-load operation, the Jaeger's engine does its work in 48,000 fewer revolutions.

Because it runs slower, it saves miles of engine piston travel and pounds of fuel every working day. The engine requires less maintenance . . . lives a longer operating life.

The compressor unit in a Jaeger lasts longer, too. 8000 hours without a vane replacement is not unusual. Ask any Jaeger owner; ask your Jaeger distributor—or send for new catalog JC-O.

← **LOW COST AIR FROM THIS "900", TOO.** The Jaeger "900" uses the same GM 6-110 diesel engine as other "900" rotaries, yet it produces its rated capacity at 100 rpm slower speed (1700 instead of 1800). Consequently, a Jaeger "900" produces more than 500 cf of air per pound of fuel. And it needs less maintenance, has a longer life. Other Jaeger models, from 75 to 355 cfm, are of comparable efficiency.

THE JAEGER MACHINE CO., 701 Dublin Ave., Columbus 16, Ohio
Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario
World-wide sales and service through Jaeger International Corporation, Apartado 137, Panama, R.P.
PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

For more facts, use Request Card at page 18 and circle No. 288



Some 5 rounds are shot per day, and the muck is handled by an Eimco 21 loader, which here dumps to a 2-cubic-yard mine dump car. Mucking for each round takes about 1½ hours; approximately 24 carloads of material is removed in this time.

CONTRACTORS AND ENGINEERS

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INEERS



◀ This Plymouth 6-ton diesel locomotive pulls seven or eight mine cars to the base of one of the three working shafts so that the cars can be hoisted to the surface by a crane and there emptied.

Utilities in the tunnel include a compressed-air line and water line on the wall at left. On the roof is a 12-inch-diameter Naylor air line, equipped with two reversible fans, to supply air to the crew and to exhaust fumes and dust after blasting is done. ▶



per 8-hour day for an average daily advance of 35 feet. They have had few problems from ground water and none from gas.

Dean attributed his rapid advance through the hard rock to common sense, a good crew, and the right equipment. On this project, his equipment consisted of Atlas Copco rock drills, Sandvik-Coromant integral drill steels, and an Eimco 21 loader.

Most of the drilling was done with Atlas Copco Lion machines, which have an optimum penetration rate of about 2 fpm in hard granite. Dean estimates the 65-pound drills, fitted with semi-integral pneumatic pusher legs, were driving into the dolomite limestone at an average speed of 28 to 30 inches per minute. The life of the 8-foot Sandvik-Coromant integral steels averaged from 1,500 to 1,700 linear feet. These were hoisted to the surface at the end of each 8-hour shift and sharpened on an air-powered grinder for use the next day. There were seven drill units on the job.

Five-man team

The underground work pattern had a 5-man team drill out a 30 to 33-hole, 8-foot round, in 40 to 50 minutes. Total time from blast to blast in the double heading ranged from an hour and ten minutes to an hour and a half.

In the 9-foot-diameter heading, each round brought down about 23 cubic yards of well fragmented rock for a 3.7 powder factor. Using short-period delays, 75 to 80 pounds of

(Continued on next page)



Republic Steel roof bolts, 4 feet long, are inserted into 1 1/2-inch-diameter holes in rows on 3-foot centers along the tunnel. The bolts support 6 x 6-inch plates.

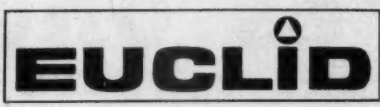


There's a type and size just right for your job!

Whatever your off-highway hauling work may be—heavy construction, mine, quarry and industrial jobs—there's a job proved "Euc" that can cut your costs and step up production. With unmatched field experience and parts and service facilities of a world wide dealer organization, Euclid Rear-Dumps meet today's requirements for big performance on the toughest jobs.

For facts and figures proof that "Eucs" can mean lower costs on your work and are your best investment, call the Euclid dealer that serves your area.

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



FOR MOVING EARTH, ROCK, COAL AND ORE

- R-10 ^{TEN} TONS
- R-18 ¹⁸ TONS
- R-22 ²² TONS
- R-27 ²⁷ TONS
- R-40 ⁴⁰ TONS
- R-55 ⁵⁵ TONS

PLUS

12, 22 and 35-TON
SEMI-TRAILER
REAR-DUMPS



Max Dean, Jr., left foreground, project manager for Verona Contracting Co., Inc., and B. W. Hoadley, right foreground, resident engineer for the New York State Department of Public Works, together with one of the drilling crews, oblige the photographer.

(Continued from preceding page)

powder was used per round. Each shot gave a net advance of about 7 feet.

Mucking out

The 5-man mucking crew waited about 10 minutes for smoke to clear after each shot before going to work. Using an Elmco 21 loader, they mucked out a round in about 1 1/4 hours. The 2-cubic-foot-capacity mine dump cars were pulled in seven or eight-car trains to the base of a working shaft by a Plymouth 6-ton diesel locomotive. From there the cars were hoisted singly to the sur-

face by a crane, and the rock dumped for future disposal.

Mucking each round required about 24 cars, running on 24-inch track laid in 15-foot sections. Planned as a bedrock tunnel, rather than a conventional-type system, Verona's contract called for a 9-inch invert requiring some 1,400 cubic yards of concrete consisting of 1 1/2 barrels of cement per cubic yard. Another 400 yards of concrete went into the man-holes and shaft work.

Future planning

The tunnels were driven about a foot larger in diameter than specified so that a concrete lining can be placed in the future if this becomes necessary. The 4-foot-long Republic Steel roof bolts, 3/4 inch in diameter, were placed throughout the system on 3-foot centers. These bolts, positioned in 1 1/2-inch-diameter drill holes, support 6 x 6-inch steel plates.

Bernard W. Hoadley is the resident engineer for the New York State Department of Public Works.

THE EN

New building program announced by Armco

Armco Steel Corp., Middletown, Ohio, has announced a \$95 million construction program that includes new facilities at its plants in Ashland, Ky., and Houston, Texas, to be completed in 1962.

New processing and finishing facilities at the Ashland Works of the company's Armco Division will permit greater utilization of the full capacity of the plant's hot strip mill. A new combination slab and 160-inch-plate mill has been added at the Houston Works of the Sheffield Division.

A combination pipe mill to be constructed at the Ambridge, Pa., plant of the National Supply Co., an Armco subsidiary, will consolidate National Supply's welded steel pipe, seamless pipe, and electric conduit operations in one plant.

Armco is also planning to consolidate its spiral-welded-pipe manufacturing facilities in a new plant at Middletown, Ohio.

Flintkote acquires Rand licenses

The Flintkote Co., New York, N. Y., has acquired licenses under Rand Development Corp. and Canadian Ingersoll-Rand Co. Ltd.'s spray-up process patents.

The agreement permits Flintkote to combine its Sealzit gun with the Rand process for spraying reinforced plastics.

Flintkote has made arrangements for the present owners of Sealzit guns to become licensees under the Rand patents at the usual royalty rates.

Flintkote will act as a Rand distributor in most sections of the country.

CONTRACTORS AND ENGINEERS



Job records prove Firestone's GIANT TIRE TEAM GAINS BIG YARDAGE!

1. **Firestone Giant Tires** hold the line against downtime to widen your profit margin. Cost-cutting toughness is built into Firestone off-the-highway tires with Shock-Fortified Nylon cord and Firestone Rubber-X, the longest-wearing rubber ever used in Firestone off-the-highway tires.
2. **Firestone Giant Tire Service** is the job of experts who match the right Firestone tire to your equipment, light and heavy. These men provide 24-hour service for every tire on the project to help you meet tight schedules.

Call your Firestone Dealer or Store and get the word how Firestone's Giant Tire Team turns downtime into worktime. Or, write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio. Always Specify Firestone Tires When Ordering New Equipment.

Tune in Eyewitness to History every Friday evening, CBS Television Network

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1961, The Firestone Tire & Rubber Company

For more facts, use Request Card at page 18 and circle No. 290

Tire service program keeps vehicles rolling at Cougar Dam project

A rigid daily inspection program is responsible for keeping more than 600 tires in daily service without a flat at the \$49 million Cougar Dam project on the McKenzie River 51 miles east of Eugene, Ore.

The project, which will be the largest compacted rock-fill dam of its type in the Pacific Northwest, is being built by the U. S. Army Corps of Engineers, Portland District. The contractor is Merritt-Chapman & Scott Corp., New York, N. Y.

The dam will be approximately 485 feet high and 1,600 feet long; the reservoir will extend 6 miles up the Willamette Basin on the south fork of the river with a storage-pool capacity of 219,000 acre-feet. The crest of the dam will be 40 feet wide, and maximum width at the base will be 1,500 feet. Cougar Reservoir is a multipurpose project for flood control, electric power production, and public recreation. Completion is expected in 1963.

More than 12 million yards of rock, coming from a knob high above the river, must be hauled more than a mile over a twisting downhill road before being placed into the dam embankment. The rock-strewn roads and heavy loads give tires on some 60 haul vehicles a real workout. Some 40 other trucks, water wagons, rollers, and mobile cranes are also involved in the operation.

The tire service program is operated by B. F. Goodrich Tire Co. from a warehouse and service facility less than a mile from the dam. E. L. "Spike" McMillan, lead tire man, and his crew answer calls for tire service without any lost motion. Emergency calls are rare because every tire on the job is inspected three times a day—in the morning before work starts, at the noon lunch break, and during shift change at 4:30 p. m. It seldom takes longer than 15 minutes to change a tire—even size 18.00 x 25 used on International Payhaulers.

Under this inspection program, any tire showing damage or possible failure is replaced on the spot or marked and listed on the inspection chart for early attention. It is estimated that tires operating under this plan will give 25 per cent more service than tires allowed to perform until they fail.

The large stock of tires in the service shop ensures fast replacement. Tires with minor damage are repaired and returned to service. When treads are worn beyond use, the carcasses are shipped to Mel Goodin Tire Co. at Portland for retreading. Some of the tires will be retreaded two or three times before they are taken out of service.

Tires range from size 4.00 x 8 on portable pumps to the large 27.00 x 33 B. F. Goodrich giants that weigh

1,632 pounds each. A new protective tire-tread compound has been particularly effective in off-road work where sharp rocks are an expensive hazard.

The tire service equipment includes two trucks equipped with power tools, hoists, and air compressors. A new type of power truck is being designed for this service and will be tested at Cougar Dam.



"Now stop worrying, Mr. Hoskins, we'll beat that deadline!"

New "Time study" TORQMATIC

3-SPEED

handles bigger loader power—
speeds bigger loader jobs

Here's the new, more powerful hydraulic transmission loaders have long needed—the CRT-3531 "Time-Study" TORQMATIC 3-Speed.

Built for bigger jobs, it can handle 350 ft.-lbs. of engine torque... features a special high-efficiency, three-element torque converter with a stall torque ratio of 3.7 to 1... provides total torque multiplication of 29.6.

And, because it has only 3 speeds instead of 4, it cuts the shifts operators must make—naturally the three-speed loaders crowd, dig, load and travel faster.

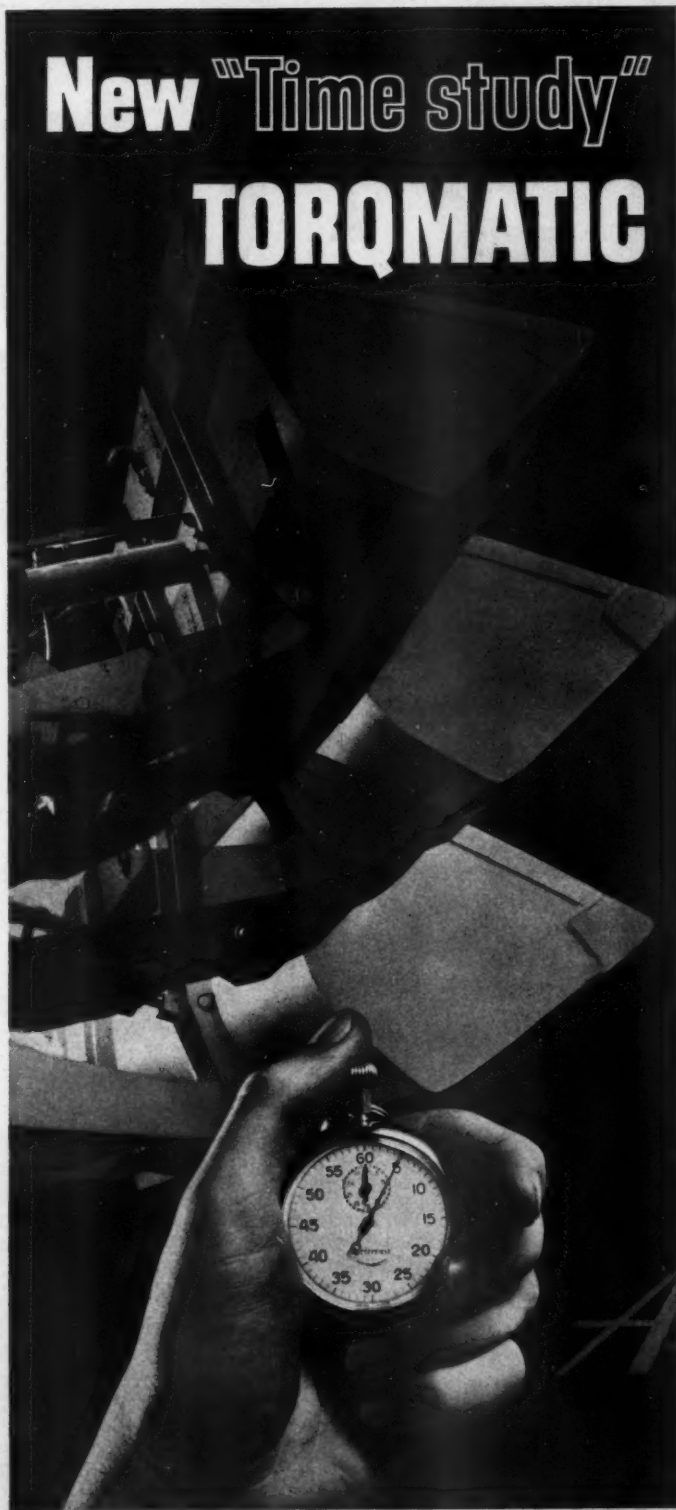
What's more, like the time-proved CRT-3331 "Time-Study" TORQMATIC, it's designed to need no major service for two-engine overhauls.


The reasons are clear: Integrated converter-transmission eliminates troublesome hoses... planetary (not countershaft) gearing splits tooth load three ways... clutches are up to twice the diameter of those used in other hydraulic transmissions.

Want the full story? Write Allison today.

Allison Division of General Motors
Indianapolis 6, Indiana

In Canada: General Motors Diesel Ltd., London, Ontario



Allison 

**TORQMATIC®
DRIVES**

THE MODERN DRIVE FOR
MODERN LOADERS

For more facts, use Request Card at page 18 and circle No. 292



Control ground vibrations caused by foundation work and

The accelerograph—an instrument for recording ground vibrations—is used by Liberty Mutual Insurance Co. at job sites to check the frequency and magnitude of vibrations caused by pile driving or blasting. Information gained by engineers enables contractors to make sure that their operations will cause no damage to nearby structures. In case of a suit for damages, the records can be used in court to dispute claims.

You can controple

by ARTHUR GORDON and FRANK E. BURKE

Average youngsters may cause more vibration in a house than pile-driving operations going on nearby, but if a crack appears in a ceiling or foundation—even though it may be caused by last year's storm or the settling of the house—a contractor

can find himself with a law suit on his hands.

Possibility of claims for damage caused by pile driving or blasting is a big headache to contractors doing foundation work, but there are a number of ways in which they can

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Asphalt Institute tests frost's effect on soils

■ Investigations at The Asphalt Institute laboratories, College Park, Md., aimed at determining the frost susceptibility of soils, with and without asphalt additive, suggest that the decline in the load-bearing strength of a soil during the freezing-thawing cycle may be caused by loss in water content.

In the initial phase of the studies, researchers subjected asphalt-stabilized and unstabilized soil specimens to eight freeze-thaw cycles.

Results indicated that the strength of each specimen decreased by approximately 50 per cent after the first cycle, then increased up to the fourth cycle for the unstabilized soils, and up to the sixth cycle for the asphalt-stabilized soils. Subsequent freeze-thaw cycles showed a gradual decline in the compressive strength of both specimens.

During all the cycles, the strength of the asphalt-stabilized specimens remained higher than that of the unstabilized specimens, regardless of the fact that all specimens had about the same strength in the beginning. During the cycles, the specimens lost approximately two-thirds of their initial water.

Since the pattern of water loss followed the change in strength, and there was no measurable change in the density of the specimens, the change in strength was judged to be caused by loss of water rather than freeze-thaw conditions.

Airco releases film

■ A 16-mm film, "Industrial Gases and Shielded Arc-Welding," has been released by Air Reduction Sales Co., New York, N. Y.

The 27-minute color and sound movie features new welding equipment and techniques, and correlates the story of industrial gases with welding applications. The main part of the film illustrates the use of these gases in Heliweld, Aircospot, and Aircomatic equipment.

Prints of the film are available on loan, free of charge, by contacting your local representative of Air Reduction Sales Co.

PACAL



You can see
it's Pacal

T.M. Reg. U.S. Pat. Off.



Buy Pacal Heat Treated Plow Bolts, too. They have triple strength and hardness. They will not loosen or stretch and heads will not wear off. Especially developed to provide the longer wear required by Pacal X-TRA-EDGE BLADES.

Also available
3/4" heavy duty section
with 3/4" top

PAPER, CALMENSON and Company

A team of loss-prevention engineers conducts a series of tests at the site of a building being erected near Albany, N. Y., by Raymond International, Inc.

pile-driving claims

Assistant Chief Engineers, Liberty Mutual Insurance Co., Boston, Mass.

chop down the odds on being slapped by suits for claims.

On most pile-driving jobs, for instance, the contractor signs an agreement to furnish the equipment, skill, and know-how to drive specified piles in locations specified by the archi-

tect. Generally, a contractor can refuse to drive piles when he runs into conditions where there is a likelihood of his damaging adjacent structures unless precautions are taken. In some cases, shoring may be necessary. In others, bracing underpinning of the



BLADES

the popular choice

County Highway Official, Iowa — "After one year's use new Pacal blades have saved our county 40 to 50% in blade and bolt costs."



County Highway Engineer, Iowa — "Special hardened blades very satisfactory here. Switching to this three-piece arrangement 100%."



County Highway Official, Minnesota — "380 hours on machine before blades were worn out."

County Highway Superintendent, Indiana — "Results very good... getting 4 times the wear over old $\frac{1}{4}$ " x 6" double bevel curved blades."



County Highway Official, Iowa — "Very pleased with new three-piece blade... receiving four times the wear of blades previously used."



State Highway Engineer — "Have used 15 sets of $\frac{1}{4}$ " to $\frac{3}{4}$ " x 8" blades. They wear very straight and 50-60% longer than $\frac{1}{2}$ " x 8" blades."

County Highway Official, Missouri — "Pacal $\frac{1}{4}$ " to $\frac{3}{4}$ " x 8" special hardened blades giving about 5 times more wear than $\frac{1}{2}$ " x 6" blades."



County Highway Superintendent, Ill. — "Using $\frac{1}{2}$ " to $\frac{3}{4}$ " x 8" blades and know they outlast 5 to 6 pairs of $\frac{1}{2}$ " x 6" double bevel curved blades."



City Street Commissioner, Missouri — "Three-piece $\frac{3}{8}$ " to $\frac{7}{8}$ " x 8" hardened blade wearing 5 to 6 times as long as $\frac{1}{4}$ " x 6" double bevel curved blade."

SPECIAL HARDENED
X-TRA EDGE CENTER BLADE

STANDARD
END BLADE

Profile of Pacal X-TRA-EDGE BLADE shows how you can get more steel on the wearing edge with no increase in waste. New Pacal hardened center section resists crowning, makes your blades wear two to six times longer, cutting blade costs even more. Join the number of satisfied users—write or call Pacal!

ALL STEELS FURNISHED BY PACAL MADE IN U.S.A.

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house involved or changing the design of the pile to a type that will produce less vibration may be necessary.

The biggest hazard crops up when vibrations caused by pile driving have a low frequency and high amplitude. Through the use of instrumentation such as the accelerograph used by Liberty Mutual Insurance Co., it can be determined if a different method of driving or a different type of pile should be used. The same unit is also used to obtain information needed to determine the amount of dynamite that can safely be used to blast without damaging any part of a nearby structure.

Liberty's Loss Prevention Department has measured the energy ratios of thousands of pile-driving operations in all types of soils by means of its accelerograph. In very few instances have the energies developed by the pile-driving equipment been sufficient to cause even plaster to crack.

Driving in sand, fill, clay

When piles are to be driven into firm or hard sand, a good rule of thumb to remember is that the vibration from pile driving will dampen out in approximately the length of the pile. Any structure within the area of a circle having a radius the length of the pile and its center at the spot where the pile is to be placed should be considered in a hazardous area.

When piles are to be driven in filled-in areas consisting of rubbish, garbage, rock, earth, logs, etc., the vibrations are severe. In this type of material, it is not unusual for the pile to strike a rock, tree, or large piece of concrete. Should driving be continued, the entire mass will be set in motion causing the vibrations to travel an extensive distance with a considerable amount of force. Sometimes, it may be necessary to change the type of pile being used to minimize the possibility of damage.

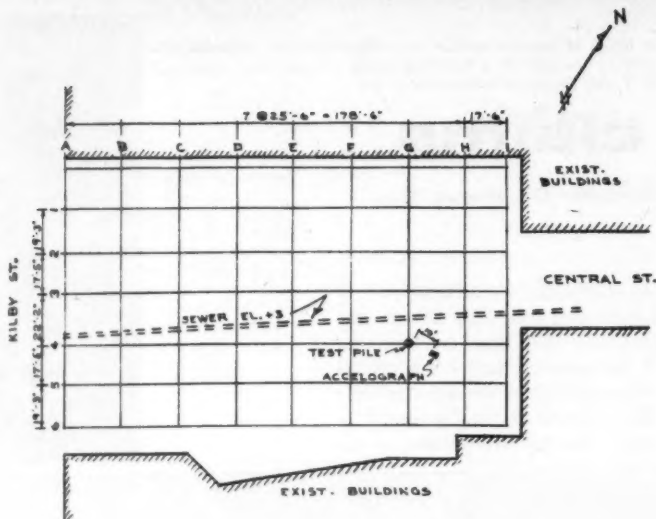
In high-water-content plastic clays, the vibrations from pile driving carry a great distance before damping out. There is no specific rule of thumb that can be used when work is being done in this type of material. But it is safe to say that the vibrations will not damp out for 2 or 3 times the length of a pile.

Ground water in soils increases the

For more facts, use Request Card at page 18 and circle No. 293

CIRCULAR 800

This plan shows the vibration test setup on a Raymond International job for a parking garage in Boston. The recording accelerograph was set in the cut 10 feet from pile No. 9 in the 10-pile cluster. The maximum energy ratio developed during the series of tests was shown to be below the safe limit allowed by the state.



THE FASTEST CUTTING

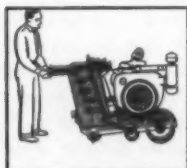


CONCRETE SAW BUILT!



The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

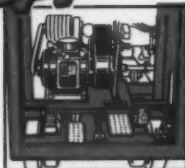
AND HERE'S HOW *Clipper* BUILDS THEM...



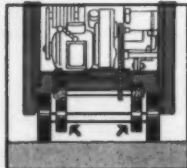
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



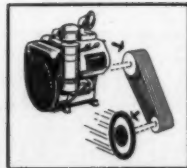
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed... which gives you positive control of the blade at all times... and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method... not even hydraulic... gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curving compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

ONLY CLIPPER CONCRETE SAWS ARE... Unconditionally Guaranteed TO CUT FASTER—HANDLE EASIER AND GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!
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 Sold direct from Clipper offices and warehouses coast to coast. • Call your Factory Trained Representative for Free Demonstration.

For more facts, use Request Card at page 18 and circle No. 294

(Continued from preceding page)

distance that vibrations will travel. The closer the water table to ground surface, the greater the increase in the transmission of vibration.

Because the type of soil governs ground vibrations, it is extremely important that a qualified engineer or consultant determine just what type it is. This may be done by referring to the test borings taken at a point nearest to the piles in question.

If it is decided to make an instrument check, it is important that the test be recorded at the very start of the job. Otherwise, any claimant will be able to say that the vibrations were much worse at the start than when the tests were made.

Tests should be taken on each job whenever they are warranted. One test made under the direction of a Liberty loss-prevention engineer is taken with the accelerograph set up at the same distance from the pile as the nearest structure. Tests should also be taken on two other piles at varying distances from the most questionable pile. For comparative purposes, it is a good idea to take another vibration test of some other conditions in the area that could produce vibration damage. Heavy equipment or trucks moving over a bumpy road in the area, for instance, may set up enough vibration to cause trouble.

The accelerograph

Essentially a ground-vibration recording instrument, the accelerograph is valued at about \$2,000. Its chief function is to help policyholder contractors determine the safety of their operations, to cut liability claims, and to hold down insurance costs.

The equipment is housed in two portable containers, one for the power or controls unit and one for the recorder. At a test station, the instrument is placed on solid ground, anywhere from a few to several hundred feet away from the pile-driving area.

Inside the accelerograph are three thin reeds, set at right angles to each other; these are activated by vibrations of any magnitude. Small concave mirrors are attached to the reeds, and as the reeds vibrate, the mirrors pick up a source of light and reflect the pattern of reed vibration onto a moving 70-mm film. This film provides a visual image of the tremors in three different planes—vertical, transverse, and longitudinal.

The film is then shipped with other pertinent information from the test to Liberty's home office for laboratory analysis. From the information obtained, engineers prepare charts of pile-point penetration in feet and of vibration-test layout.

Using the basic formula for kinetic energy, in which kinetic energy equals the weight of the mass in pounds multiplied by the square of the velocity expressed in feet per second over twice gravity, engineers determine the energy reading for the pile-driving tests.

Liberty first used the accelerograph during construction of the Chicago Subway system more than 20 years

ago, when made. Du mined th was kept are was When the from 3 up was dama Since used to cases be damage o ings loca from the Many tim in a comp any vib work.

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ago, when about 3,000 tests were made. During the tests, it was determined that when the energy ratio was kept at 3 or less, no plaster damage was caused in nearby buildings. When the energy ratio was increased from 3 up to and including 6, plaster was damaged.

Since then, readings have been used to good advantage in damage cases before the courts. In some, damage claims were made for buildings located as far as 300 to 500 feet from the pile-driving operations. Many times, the instrument was used in a complainant's building to record any vibrations from pile-driving work.

Case histories

Some recent cases point up the value of using the accelerometer to cut time and money losses and to hold insurance costs in line. Last year, for instance, the unit was used in tests at Roslindale, Mass., at the request of the Franki Foundation Co. On this job, the contractor had to install 92 Franki displacement caissons for a building foundation. The work involved driving a steel pipe, with a 7,000-pound drop hammer striking a concrete plug at the tip, through fill and peat into a sand stratum for the final injection of the concrete for the footing.

Four different recordings were made during the most severe driving work. The first was made when the pile point hit a 35-foot penetration and the initial concrete plug was driven out. The second test was made with the pile point at 37-foot penetration while concrete was being rammed into the soil with 140,000-foot-pound blows to start the belled footing. The third and fourth tests were made as concrete was being rammed into the base as the belled footings were completed.

The accelerometer was set on compact material some 30 feet from the test caisson—much closer than buildings bordering the job site. The resultant energy ratios were plotted on a chart, and it was determined that the maximum energy ratio was developed during the second recording, at the start of forming the base. The energy ratio value at 30 feet was well within the safe range. In Massachusetts, the legal code for vibration effect is at an energy ratio limit of 1.0 as the maximum. Under this limit, it is assumed that damage will not occur to a structure and that the contractor is not negligent in his operation.

Another series of tests—this time for Raymond International, Inc.—was made in Boston to measure ground vibrations produced by driving foundation piles for a parking garage. It was also necessary to determine any possibility of damaging nearby buildings when driving within a 7-foot distance from a structure.

On this job, the contractor had to drive 357 closed-end steel pipe piles for the foundation. These were 12 3/4 inches in outside diameter, varied from 50 to 90 feet in length, and were driven with a 6,500-pound hammer having a 3-foot drop to produce 19,500 foot-pounds of energy.

In the sequence of operations, an open-end steel casing with a diameter slightly larger than the pile, was first driven about 15 feet to core clay material. After the casing was hoisted up, the clay was blown out with steam. A clay core of 45 feet in three sections was removed before the test pile was driven. The closed-end pile was then dropped into the bored hole and driven to refusal in hardpan. During the work, the recording instrument was set on solid ground in the level of the cut and about 10 feet from the pile. A recording was taken of 10 blows at various levels of penetration during driving, and also at refusal.

It was found that the maximum energy ratio was developed during the coring operations at a level of about

15 feet in depth. The energy ratio value was 0.064. During the driving, the ratio was much less. It was always in a safe zone.

The most critical distance on this job was 7 feet; the distance piles were driven from an existing building along the east side of the lot. The determination of a probable energy ratio that could be developed at this distance was roughly 0.15. This ratio produced a safety factor of about 7 to 8 of the Massachusetts limit.

For added safety, and in order to prevent displacement and possible upheaval, Liberty's engineers recommended that the coring operations be carried down to a level of 30 to 40 feet in the clay before the actual driving of the closed-end pile was started.

Perhaps the biggest factor in public

distrust and dislike of pile-driving operations is the ground vibration. Engineers estimate that a person can feel one-hundredth of the force necessary to crack plaster. A shock one-fifth of the level necessary to damage ordinary structures may be very startling to building occupants.

This means that a contractor is asking for trouble if he doesn't make an effort to keep nearby residents posted on operations, assure them that all safety measures are being taken, and allay their fears.

The little effort needed for this public-relations work can pay handsome dividends, for a top record means bottom-dollar insurance rates, and the margin of savings here can be highly important when bidding is close for a contract. THE END



GEARED BY FULLER

Scrapper performance is important through EVERY INCH OF THE WORK CYCLE

Allis-Chalmers' new TS-360 Motor Scraper—30 yards heaped—was designed with four major performance factors in mind: acceleration under load, sustained haul speeds, exceptional maneuverability and full-power spreading on the fill.

To achieve this performance, the 340 hp scraper is equipped with a Fuller 5-G-1520 5-speed Transmis-

sion. The heavy-duty, constant-mesh, spur-gear transmission features the Fuller Air-Actuated Countershaft Inertia Brake, which permits quick, easy up-shifts without double-clutching. Activated simply by pushing a button, the countershaft brake helps maintain momentum during shifts for maximum acceleration and sustained speed throughout the entire work cycle.

The 5-G-1520 is also equipped with the Fuller Pressure Lubrication and Filtration System which keeps gear oil clean, provides longer gear and bearing life and higher equipment availability.

Ask your equipment dealer about the Fuller Transmission designed to get more work from *your* equipment, put more profit in *your* operation.

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For more facts, use Request Card at page 18 and circle No. 295

**Snakes, 'gators, and
13 million yards of muck
give road builders
plenty of problems as**

Dredging starts work on interstate highway

Contractors and Engineers staff article

It's nice country for alligators, water moccasins, and marsh rats, but the water-soaked land on the edge of Lake Pontchartrain is a ticklish place to build a road. In this area, just north of New Orleans, you can't walk on the ground because you sink up to your armpits in mud. You can't



This is one of the contractor's job problems—an 8-foot alligator shot by one of the crew. 'Gators weren't considered as dangerous as the water moccasins and other poisonous snakes that infested the area.

boat on the water because the shallow puddles lead nowhere. You have problems any way you turn.

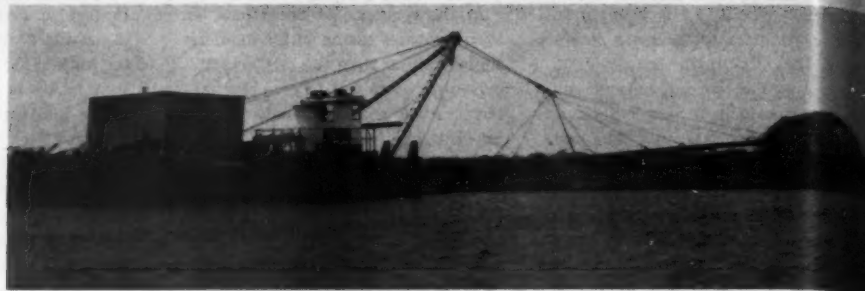
Plenty of problems

Engineers and contractors working on an 8-mile stretch of Interstate 10 through this country face challenges not often encountered by road builders.

There's the problem of getting rid of the muck. In this marshy country, the muck goes down to a depth of about 15 feet. It must be dredged out of the roadway before fill can be placed. It must be dredged off the top of borrow areas before suitable material can be reached. And there's a lot of it to be handled—about 8 million yards from the borrow areas, about 5 million yards from the roadway.

Getting around on the job is a problem. Access roads were dug rather than built. Dredges, as well as boats carrying men and equipment, get from place to place on a network of 6 miles of access channel. For pipe-laying crews and survey parties, an amphibious marsh buggy is an indispensable means of transportation.

Another problem was that of breaching an existing levee to get dredges into the job. This was solved by building an ingenious combination of gate and bridge. Basically, it con-



The 12-inch cutterhead Tennessee is one of the dredges removing muck preparatory to placement of fill for an 8-mile stretch of Interstate 10 through the swampy area near Lake Pontchartrain in Louisiana. It discharges material on the far side of a dike paralleling the right-of-way. An A-frame boom on the barge supports the four lengths of discharge line, which never rests on the ground and never has to be extended.

Save on construction costs with the new '61 FORD TRUCKS

SAVE FROM \$31 TO \$157 ON PRICE* ALONE WITH FORD'S F-100 STYLESIDE PICKUPS

Contractors everywhere are finding that the half-ton Ford Styleside is priced below all other comparable pickups! And these rugged pickups are designed to keep right on saving with lower maintenance and operating expenses. Their durable, one-piece cab-and-box construction provides increased rigidity and eliminates a major source of rust and corrosion. Not only does the sheet metal last longer with this stronger body, but it also contributes to a quieter ride.

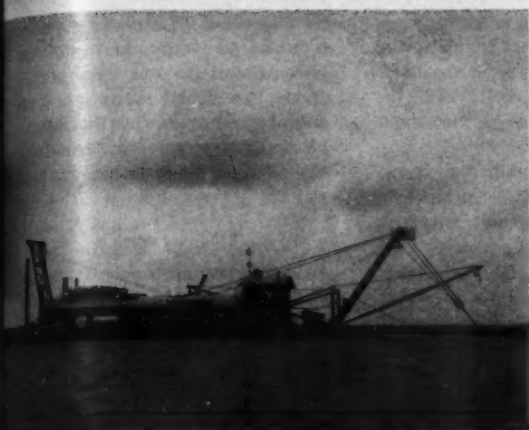
And you can save more . . . because you can carry more on every trip. Styleside bodies are longer and wider with loadspace increased as much as 16%. In addition, wheelbases have been lengthened 4 inches and this combined

with the improved shock absorbers gives a ride that's unexcelled in its field—proven by scientific Impact-O-Graph tests. For construction work the angle of approach has been increased so you can climb steeper drives or go over deeper ditches or gullies. Ford also offers America's lowest-priced* 4 x 4 with big 8-ft. box, the F-100 Flareside.

And you can save on operating expense! Ford's Mileage Maker 223 Six is standard on all conventional pickups to keep gas costs low. The economical 292 V-8 is available for jobs requiring extra power. Both engines are equipped with Ford's Full-Flow oil filter that lets you get 4,000 miles between oil changes.

*Based on a comparison of latest available manufacturers' suggested retail delivered prices





In a borrow area, the 20-inch cutterhead America is cutting about 16 feet of waste material before getting to sand and suitable clays. About 7 million yards has to be stripped from borrow areas. This job is the first for the new dredge.



The terrain was no problem for this Quality PCC-Track marsh buggy, which here pulls a sled carrying pipe so that crews can extend a dredge discharge line.



Unsuitable material is being dredged out of a ramp area at the east end of the job by the 16-inch cutterhead Piquemines. F. J. J. Sloat Dredging Co., Slidell, La., the owner, subcontracted a portion of the mucking.



SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's savingest two-tonners offer a big 262 Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves, and durable pyramid-type connecting rods. And Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

You also save with other new durability features like the more rugged frame, stronger radiator with new lock-seam construction, improved cab and chassis electrical wiring, plus longer, easier-riding and more durable rear springs. Ford's parallel ladder-type frame with standard 34-inch width allows you to install new or transfer your present special construction bodies quicker and for less. Also, the frame drop in the cab area lowers cab height . . . makes for easier entry.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . . ▶

sists of a pontoon barge that is floated into the breach of the levee and then sunk in position. To open the gate, water is pumped out of the barge, and it is floated to one side. The wooden superstructure on the barge serves as a bridge for vehicular traffic traveling along the top of the levee.

A \$6 million contract

The general contractor for the project, R. B. Potashnick, Cape Girardeau, Mo., started work on its \$6 million contract in July, 1959. It expects to complete the paving by November of 1961.

The 8.1-mile section of 4-lane divided highway is a part of Interstate 10 that swings north of the city of New Orleans. At the present time, this stretch ties in on the west with an existing 2-lane highway (two additional lanes will be built). On the east, the expressway will meet a 5-mile-long bridge across Lake Pontchartrain. The bridge is currently under construction by Brown & Root, Inc., of Houston. The two 24-foot lanes of the expressway will be surfaced with a plant-mix asphalt. The surfacing will be laid on a 1-foot sand-shell base resting on a dredged fill of sand and clay.

Surveyor's nightmare

Before construction of the highway could start, survey crews of the Louisiana Department of Highways had to show the contractor where to go. This was about as easy as shooting levels from a rocking boat.

In order to get around the swamp, the crew rode an amphibious marsh buggy. The Quality PCC-Track marsh buggy carried the crew through water and over the boggy land with ease. Aluminum channel tracks, rotating 3-foot-wide pontoons, made it possible for the rig to move over the quagmire at a speed of 7 or 8 miles per hour.

During the chaining and setting of station stakes, the marsh buggy towed a boat about 100 feet behind with the rear chainman in it. Station stakes—12 feet long—were pushed into the mire. Permanent reference points, set off to the side, were ¾-inch pipe driven 21 feet into the ground. Because of the boggy ground, the level



This unusual combination bridge and gate was built into an existing levee so that floating equipment could move in or out of the area and traffic could continue to use the levee. When water is pumped out of the pontoon barge, it floats and can be swung out of the way. When the barge is sunk, it closes the 50-foot gap in the levee and its wood superstructure serves as a vehicular bridge. A rubber gasket between the barge and a sill of H-beams at the bottom of the channel makes the seal.

(Continued from preceding page)

often had to be set up on a platform resting on pontoons. When it was necessary for a man to walk around on the marshland, he often used two 4-foot lengths of plywood to distribute his weight. One piece of plywood was pulled ahead of the other to make a portable walkway.

A snake per stake

Poisonous snakes were a constant menace to men on foot. On one particular day, a survey crew killed 26 water moccasins while staking out a half mile of road. At 100-foot stations, that's about a snake per stake.

One of the contractor's men claims the dubious distinction of having been bitten twice in the same day—the second time by a poisonous moccasin. Although alligators were less dangerous, there were plenty of them around. One of the men on the job shot a 'gator measuring 8 feet.

Ingenious gate

Before dredges could move onto the job, the contractor had to build a gate through an existing levee bordering Lake Pontchartrain to allow passage from the lake to the access channel. The gate also had to serve as a bridge for traffic on the levee. In its closed position, the gate had to offer as much protection from high water as did the levee.

To answer these needs, the contractor devised a unique structure. Its basic component is a 50 x 20 x 14-foot-deep steel pontoon barge. Water



Power for the main pump of the America is supplied by two 1,600-hp GM diesel-electric units. The two electric motors, foreground, turn through a gear box to drive the main shaft.

pumped into the barge by a Carver 6-inch pump sinks it in place and blocks the 50-foot gap in the levee. Water is pumped out to float the barge and allow it to be moved out of the way.

In its submerged position, the barge rests on a sill of H-beams held in place by a group of timber piles. A 2-inch rubber gasket makes the seal between the barge and the H-beam sill. The channel in the vicinity of the barge is lined with 18-foot-long sheet piles. Corners built into the sheet-piling wall prevent movement of the barge in one direction. Cables tightened by turnbuckles hold the barge in place against wooden stop-logs faced with a rubber gasket.

Mounted on top of the barge is a 6-foot-high timber frame carrying a

plank decking. The decking serves as a bridge for traffic on top of the levee. Nailed to one side of the frame is a double plank wall with steel sheeting sandwiched between the planks for waterproofing. The 6-foot-high wall serves as a dam for high waters.

Draglines move in

With the pontoon gate completed, four barge-mounted draglines moved into the job to begin digging the access channels. These channels are about 60 feet wide and 10 to 12 feet deep.

The clam and drag-bucket rigs were the first to tackle the mucking of the main roadway. They stripped off the top 7 feet, and with this material built 6-foot-high retaining

Save on construction costs with the new '61 FORD TRUCKS

FORD HEAVIES SAVE WITH DOUBLE THE CAB, SHEET METAL AND RADIATOR LIFE

Ford F-Series Heavy Duty models are especially designed for the rugged terrain and tough conditions generally found on construction jobs. Their new independent mounting system for cab and radiator effectively separates both from adjacent sheet metal assemblies for much greater durability. And radius rod-leaf type rear springs provide better axle alignment, a smoother ride and longer spring life.

The electrical wiring system has been improved for greater reliability. Chassis wiring is fastened within the protection of the frame web, away from mud, ice and snow. And Ford Truck frames have been engineered to make the mounting of bodies and special equipment easier. A new 212-inch wheelbase model is available to accommodate extra-long bodies.

Save with Ford T-Series Heavy Duty Tandems for exceptional durability, big payloads and low operating expenses. Ford T-700, T-750 and T-800 Tandems have rugged double-chassis frames that are built to take tortuous off-road treatment. And they provide a wider range of chassis options so you can choose the right power train and load-carrying components for any job. Eaton and Timken rear axles are now available in bogie assemblies with 22,000-, 28,000-, 30,000- and 34,000-lb. capacities. And lightweight aluminum walking beams, wheels and gas tanks are available to keep chassis weights low... payloads high.

Ask your Ford Dealer about Ford's full tandem line... including Super Duties with 38,000-lb. bogies for up to 51,000-lb. GVW!



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dikes on both sides of the roadway. Then two cutterhead dredges—a 12 and a 16-inch—moved onto the job to excavate the remainder of the muck. The completed channel width for the roadway measures about 200 feet across the top and 132 feet across the bottom. Average depth is about 15 feet.

In dredging the main roadway, one of the subcontractors made use of a suspended discharge line. The 12-inch cutterhead dredge Tennessee, owned by Circle Dredging Co., New Orleans, suspended about 70 feet of the discharge line from a boom mounted on a barge at the stern. The line discharged material on the far side of the retaining dike, some 50 feet from the edge of the channel. The system allowed the dredge to

move ahead without lengthening the discharge line.

Borrow material buried in muck

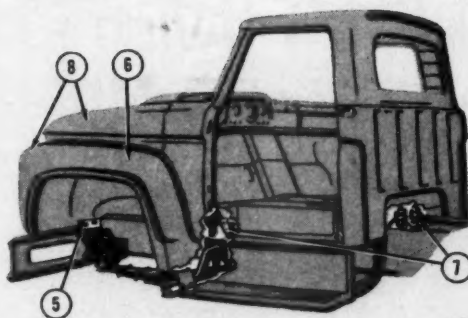
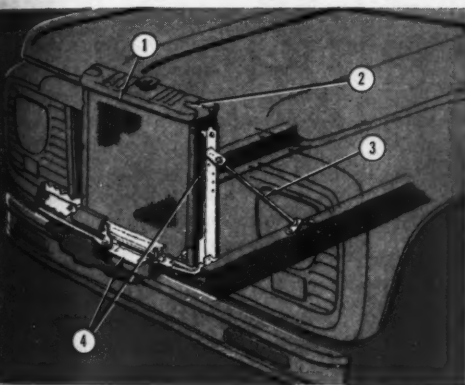
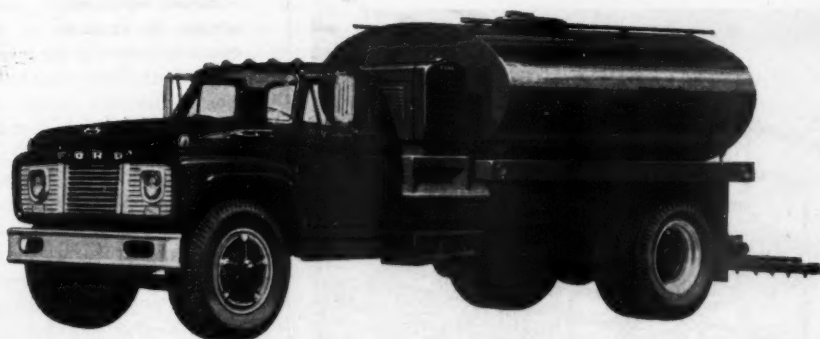
About 8 million yards of sand and clay fill will come from three borrow areas. Two of the areas are surrounded by land, while the third is in Lake Pontchartrain. The contractor expects to have three hydraulic dredges discharging material to the fill—one from each borrow area.

Clearing the surface muck from these borrow areas is a time-consuming job. It is estimated that Potashnick will have to dredge about 7.8 million yards off the tops of three borrow areas before his crews get down to pay dirt.

Pumping fill to the roadway channels is also a difficult job. Pipe crews



The Tennessee generally makes a cut of about 15 feet to reach a base suitable for backfilling to build up the main roadway. Circle Dredging Co., New Orleans, is the owner of the dredge.



- ① Save with Ford's exclusive "lock-seam" radiator construction that doubles the solder area at key seams for greatly increased strength and longer radiator life.
- ② Save with heavier-gauge metal on radiator tank and header. Tanks and header have thicker walls to resist vibration, jolts and corrosion for greater reliability.
- ③ Save with independent radiator mountings, separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.
- ④ Save with "horse collar" mounting for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.
- ⑤ Save with independent fender mountings. Fenders are bolted to a rubber-cushioned transverse bracket at the front and a frame-mounted bracket at the rear. This mounting, independent of both cab and radiator, eliminates stress transfers for increased fender life.



- ⑥ Save with removable fenders. The quick and easy removal of only 8 bolts per fender provides faster service accessibility to the engine area, saving valuable maintenance time.
- ⑦ Save with new 3-point cab mounting system for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.
- ⑧ Save with 42% heavier-gauge sheet metal in fenders, hood, cab floor pan and toeboard for greater strength, greater durability.

Save with Ford's new Full-Torque flywheel power take-off . . . now available on T-750's and up, to power construction equipment like transit mixers. It's much simpler and more efficient than long, complicated hookups needed with the front-end drives. And the flywheel PTO is lighter in weight—only 105 pounds—for greater payloads.

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FORD DIVISION, Ford Motor Company.

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are faced with the problem of working on the spongy, half-floating vegetation. Like the survey crew, they use a track marsh buggy to get around. To extend the discharge line, the buggy pulls a sled carrying a load of pipe. In some areas, the land is so unstable that empty 55-gallon drums must be lashed to the line to keep it from sinking. Wood and brush mats are also used to keep the line afloat.

In building up the fill, the discharge line moves down the center of the channel on the previously built fill. After a first lift is placed to a point above the water level, the discharge line is elbowed back in the opposite direction to build up the first lift on an adjoining stretch of roadway. While this stretch is being built, the first stretch has a chance to settle. After the first lift of the second section is completed, the final lift is made on the first section. Finally, the fill is completed on the second section. Most of the fill rises about 4 feet above natural ground, although for 2 miles the fill rises to 11 feet.

Personnel

N. M. Childs is senior project engineer for the Louisiana Department of Highways. Henry A. Saacks, Jr., is project engineer. For R. B. Potashnick, H. L. Manley is project manager, A. H. Meyer is project engineer, and Robert Hardiman is resident engineer.

THE END



The America's control system consists, basically, of electric switches activating air rams. Operator J. O. Register, at the controls, is discussing the work plan with Capt. W. C. Register.

Maintenance

The first step in an economical preventive maintenance program:



A maintenance man for The James H. Craggs Construction Co., Gainesville, Fla., hoses down a rig with a heavy-duty HPC steam cleaner. The company estimates that the cleaner with its 300-psi blast has cut its cleaning costs in half.

Low-cost equipment cleaning

Heavy-duty HPC (hydraulic pressure combination) cleaners, which combine the thermal pressure of a steam cleaner with pump-produced hydraulic pressure, have cut equipment cleaning time and costs for two Florida construction firms.

White Construction Co., a road contractor of Chiefland, has to operate its rigs in sandy soil, which becomes embedded in the grease and oil of the tracks and causes serious abrasion. It also coats engines and causes overheating. Because of this, a regular, thorough cleaning of its rigs is a must, and the contractor has turned to the use of a Malsbary heavy-duty HPC cleaner to handle the work. White maintenance men, using the cleaner, now take three hours to complete a job that the company's old steam cleaner took six to do. The higher pressures are especially helpful in reaching hard-to-clean spots, such as those between and around the core and pipes of radiators and around transmissions. Previously, steam cleaning of these areas had to be supplemented with hand work.

A Gainesville contractor, The James H. Craggs Construction Co., had a similar experience in shaving time off its maintenance operations with an HPC cleaner. This firm performs all maintenance on its rigs, including major overhauls. All its machines coming off the field in an exceptionally dirty or dusty condition are steam-cleaned. And all rigs are steam-cleaned before overhauls. The company's HPC cleaner, in use for about a year and a half, has cut cleaning time and cleaning costs by some 50 per cent.

The biggest advantage of the cleaners is their ability to operate steadily around the clock. One contractor uses its HPC continuously at least eight hours a day, five days a week, to



General Contractor: McCloskey & Co.

Heavy truss gets ride on Capitol Hill

This 14-ton steel truss being raised into position is 36 ft long. It's one of 128 trusses being used in the construction of the House of Representatives Additional Office Building, in the nation's capital. Upon completion, the 9-story structure, with its 33,600,000 cu ft of space, will be the largest of the buildings occupied by the legislative branch of government.

Bethlehem Wire Rope was called upon for countless lifting jobs at this gigantic construction project. Day after day, as the steel went into place, this quality rope gave reliable, economical service.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
Export Sales: Bethlehem Steel Export Corporation

Wire Rope depots and distributors from coast to coast stock Bethlehem Rope

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 296



Big savings have been achieved by White Construction Co., Chiefland, Fla. through the use of a Malsbary HPC steam cleaner. Hot solution at 300 psi is cutting grease-encrusted dirt from this scraper.

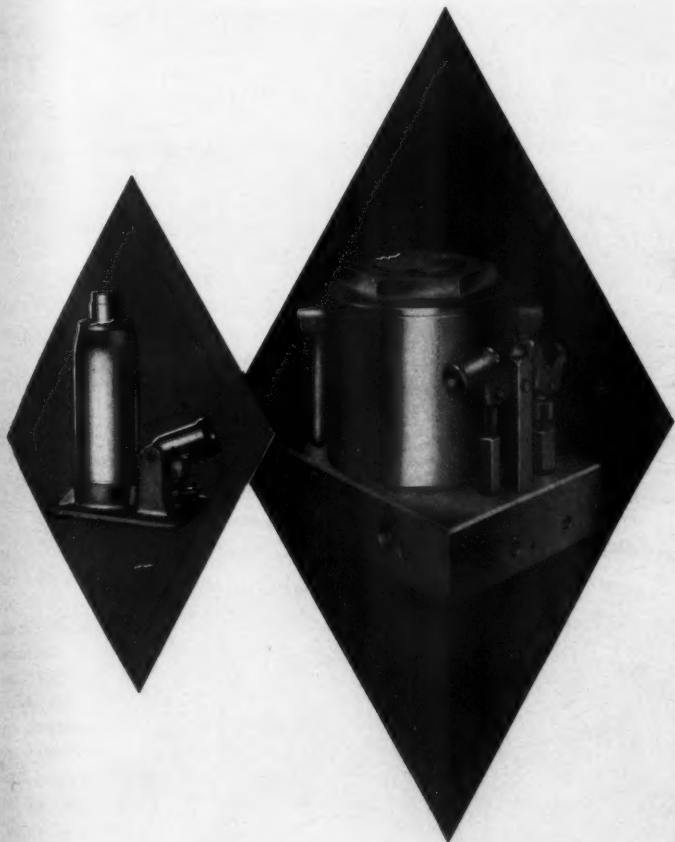
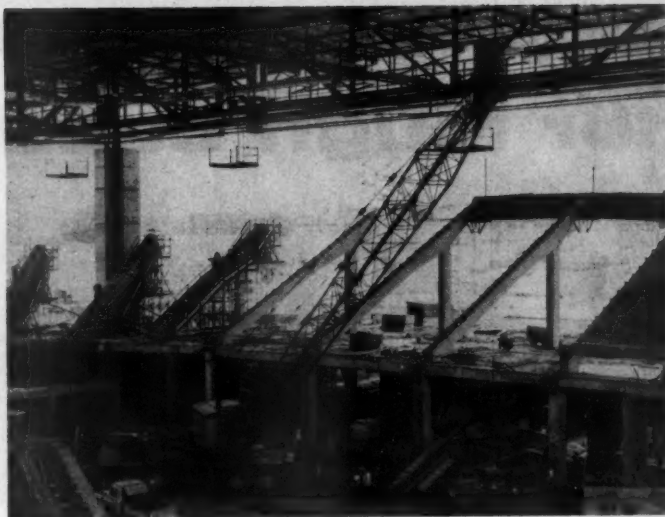
CONTRACTORS AND ENGINEERS

steam-clean every piece of equipment, as well as parts brought in for repair.

There's an advantage, too, in having two cleaners ready for use in large repair shops. While one is getting equipment ready for overhaul, another is able to clean parts as they're disassembled and reassembled. Furthermore, one rig is always available for work in case the other breaks down. A stationary cleaner in the shop and a portable one for use in the field can be the answer to problems posed by large spreads. While one is in regular use by shop mechanics, the other takes on its share of the load by cleaning fittings and parts to be lubricated and keeping dirt out of working parts. This field cleaning operation is a big help to roving mechanics, who are able to spot worn

parts and take care of field maintenance right away, saving on costly down time. **THE END**

PRECAST-CONCRETE 4-TON BEAMS are positioned for the seating area in the New Memorial Coliseum, Portland, Ore., by a Lorain 65-ton Moto-Crane. Since the roof was already erected, the crane boom had to operate at low angles and enter through a doorway. The Moto-Crane is equipped with a power folding gantry that permitted the boom to be carried almost horizontally, and Power-Set outriggers that set and retract in less than a minute. Campbell Crane & Truck Service is doing the crane work for Hoffman Construction Co.



TWELVE EASY WAYS TO LIFT FROM 3 TO 100 TONS—USE DUFF-NORTON HYDRAULIC JACKS

Designed for ease of operation this rugged, dependable line of Duff-Norton hydraulic jacks gives you rapid rise with minimum effort. Twelve models in 10 different capacities ranging from 3 to 100 tons meet the lifting requirements of all types of industry.

Duff-Norton Hy-Power Hydraulic Jacks are stocked by your distributor. For quick delivery call him the next time you need a jack, or write for a copy of Bulletin AD-16S to obtain complete details and specifications.

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DUFF-NORTON JACKS

Ratchet • Screw

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COFFING HOISTS

Ratchet Lever • Air
Hand Chain • Electric

For more facts, use Request Card at page 18 and circle No. 299

MARION . . . a dependable and profitable partner

FOR HEAVY-DUTY HAULING

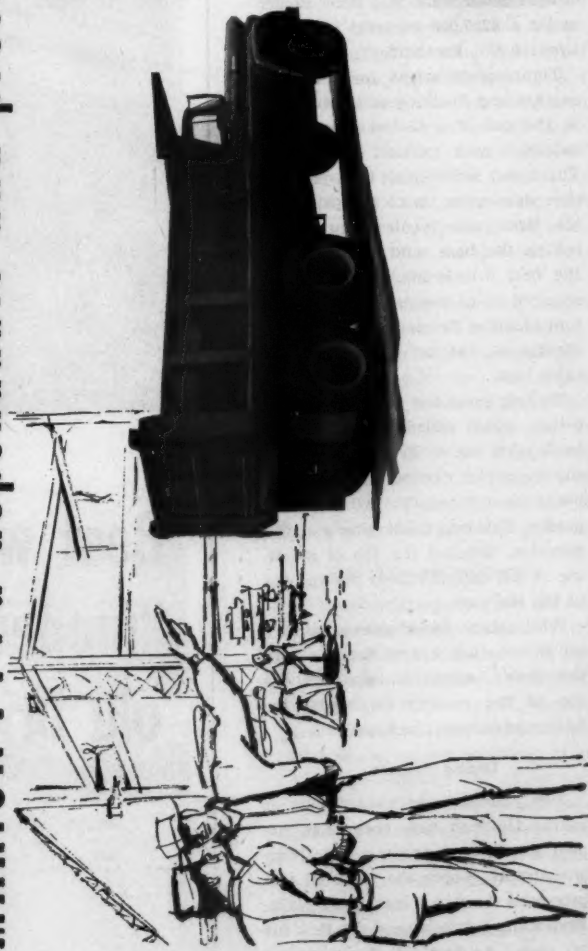
This heavy-duty, 10-yard Marion dump body is especially adaptable for use — in quarries . . . on construction sites . . . in and around gravel pits — wherever conditions are unusually severe and extra ruggedness is required for better off-the-road operations.

With this MD style body, contractors can take their choice of two types of extra strong, fast acting Marion hoists used for the dumping operation — a front mount telescopic hoist or an underbody, double arm hoist.

This combination of a heavy-duty Marion body and hoist has provided many owners throughout the country a dependable and profitable partner for their operations. It can do the same for you. We'd welcome the chance to give you all the facts.



MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.



For more facts, use Request Card at page 18 and circle No. 300

Special rig, blade for tough base spex



To meet spex requiring not more than a $\frac{3}{8}$ -inch deviation in 12 feet, the contractor on a new runway and taxiways at the Portland International Airport in Oregon uses a 24-foot blade on a Cat 12 grader. The rig has a standard 12-foot moldboard with 2-foot extensions at both ends. The special moldboard, right, is welded to a railroad rail attached to the grader's regular moldboard.



Contractors and Engineers staff article

To speed the handling of its increasing jet-age traffic, the Portland (Ore.) International Airport has added a new parallel bituminous runway 8,000 feet long and 150 feet wide, together with 7,000 feet of new 75-foot taxiways connecting the runway with the passenger terminal and other facilities on the field. An additional contract for more taxiways and a holding apron is currently under construction.

The 10-inch crushed-rock base and 3-inch asphaltic-concrete surfacing for the new facility were placed by Porter W. Yett, Portland, under a \$573,000 contract with the Port of Portland, the municipal agency that operates the airport and the port facilities. The grading, drainage, and other related work was done earlier under a \$257,000 contract by Frank Lyons & Co., Portland.

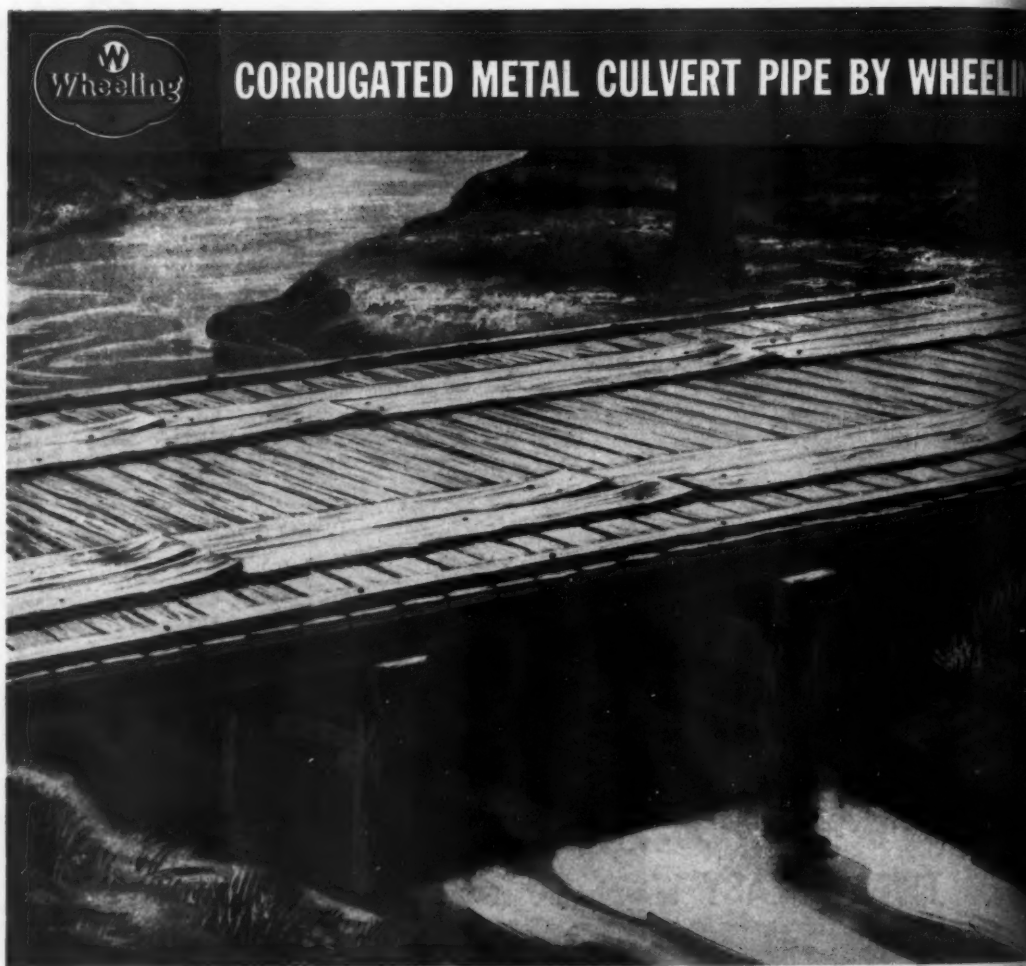
Tight specifications for the compaction and finishing of the base led to the use of a 45-ton proof roller ballasted with railroad car wheels. This heavy roller, with high-pressure tires developing up to 150 psi under the tires, was required for proof-rolling the base, and especially for the first 6-inch lift. The base was required to be compacted to 100 per cent modified Proctor, which meant a density of 144 to 145 pounds per cubic foot.

To help meet the finishing specification, which called for the base to be finished within $\frac{3}{8}$ inch in 12 feet, the contractor devised a 24-foot-long blade for a Caterpillar No. 12 motor grader. This long blade, plus a skilled operator, handled the job of blending in the turnoffs from the runway to the taxiways.

While these specifications seem a bit severe, they are in keeping with the design, which is based on the use of the runway to handle the heavy jet-powered aircraft.

Laying the base

Yett produced the 114,000 tons of minus $1\frac{1}{2}$ -inch base rock from his own pit, located about a mile from the airport, where the material was processed through a stationary plant. End-dump trucks placed the first lift of rock. A fleet of International



Best way to "modernize" old bridges!

Why fight an endless battle to maintain old bridges? Especially when you can replace these "budget eaters" with low-cost Wheeling Corrugated Metal Culvert Pipe. Just look at the advantages it has!

Resistance to shock and vibration—Unlike concrete pipe, Wheeling Corrugated Culvert Pipe is flexible. So it absorbs the severe shock caused by shifting fill and heavy trucks.

Amazing strength—This same flexibility makes Wheeling Culvert Pipe far stronger, because it enables the pipe to "borrow" strength from the surrounding earth (see for yourself

by conducting this simple test with your garden hose).

Won't disjoin—Wheeling Culvert Pipe adjusts to the pressures created by shifting fill because it has beam strength... and Wheeling Culvert Connecting Bands grip both pipe ends securely.

Special end treatments—Never a problem! You always get fast, economical service on special end treatments, including skews and bevels, from your nearby Wheeling Culvert Plant.

Problem: Because outdated bridge is used regularly by heavy logging trucks, bridge requires monthly inspection, frequent maintenance

WHEELING CORRUGATING COMPANY

Warehouses: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis,

CONTRACTORS AND ENGINEERS



When the grader with the long blade has worked the base to as nearly perfect grade as possible, a wobble-wheel rubber-tire rig rolls the base and is followed by this Buffalo-Springfield 3-wheel steel roller. Vibratory rollers finish the job.



Two Barber-Greene finishers work on adjacent lanes, the single laydown crew working first on one rig, then the other, to complete the full width of the runway for a distance of 150 feet. An International delivers a load.



The breakdown pass is handled by this Buffalo-Springfield 3-wheel 10-ton steel roller. A second pass is then made by a 10-ton tandem roller.



Solution: Wheeling Large Diameter Corrugated Metal Culvert Pipe easily handles peak stream flow . . . absorbs shock created by logging trucks.

Special finishes — For corrosive or abrasive situations, Wheeling supplies special finishes, including full and partial bituminous coatings with or without paved invert.

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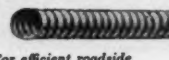
tins Ferry, Ohio, Minneapolis, Peoria, Ill., Philadelphia and St. Louis.

Get the whole story on Wheeling Corrugated Metal Culvert Pipe (both copper-bearing steel and copper-bearing pure iron) from your Wheeling man this week. Or write directly to Wheeling Corrugating Company, Wheeling, West Virginia.




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 For deep, shifting fill, use Wheeling Large or Small Diameter Culvert Pipe.

IT'S WHEELING STEEL!

New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston.

For more facts, use Request Card at page 18 and circle No. 361

trucks pulling pairs of Utility and Schetky bottom-dump trailers hauled the second lift. These trailers haul about 12 yards per load. They have transverse bottom gates that spread the material in any desired depth of course as it is dumped.

Water was applied on the grade when required, and the material was mixed by motor graders. The contractor started placing the base at the beginning of Portland's rainy season, and he made use of the natural moisture so that he could cut down on the amount he had to place from tank wagons.

With optimum moisture incorporated in the base material, the motor grader with the 24-foot blade took over the finishing job and did it well. A series of rolling operations compacted the material to the required density. A wobble-wheel rubber-tire roller started the compaction. A Buffalo-Springfield 3-wheel steel roller followed, and Essick vibratory rollers pulled in spans of two or three by a Fordson tractor completed the operation. After these rigs had achieved the required 100 per cent density, the entire first lift was proof-rolled with the 45-ton proof roller, and any areas that failed to have the specified density were recompacted.

The second lift of base was applied and compacted in the same manner, but less proof rolling was required.

The 10-inch base was not primed until 24 to 96 hours before it was paved. The priming operation was done with 0.15 gallon per square yard of MC-1 cutback asphalt applied by a Rosco distributor. Spex required paving within 96 hours after priming.

One crew uses two pavers

The asphaltic concrete for the two lifts of paving was produced in Yett's stationary plant in the gravel pit. This is a Madsen 4,000-pound batch plant. The 1½-inch binder course required 17,500 tons of mix with a maximum 1-inch aggregate and contained about 5 per cent asphalt. The 16,000 tons in the 1½-inch surface course had a maximum ¾-inch aggregate and contained between 5½ and 6 per cent asphalt. Both mixes were designed for high stability.

A fleet of International 10-wheel-

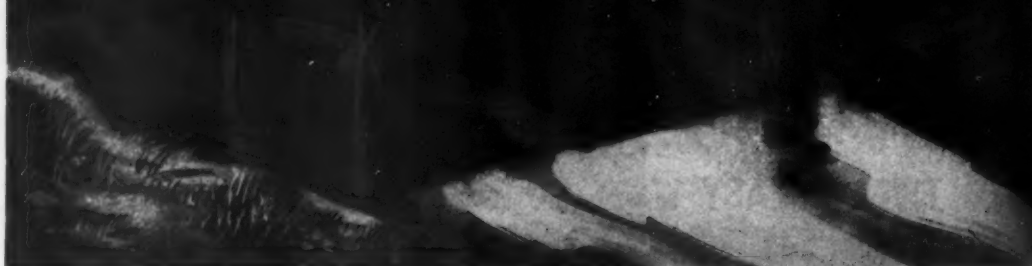
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CONTRACTORS AND ENGINEERS



A pair of Utility trailers, hauling 12 yards to the load, are positioned by an International truck to spread a load of base material on the grade at an intersection of the runway and a taxiway.



Field mechanics make a minor repair to one of the B-G finishers while the crew finishes a strip with the second rig. Maintenance work did not have to hold up production, and crews were always assured that finishers were in top shape.

(Continued from preceding page)

ers hauled the mixes from the plant to two Barber-Greene finishers on the runway. The two finishers were worked on adjacent lanes by a single crew that alternated from one rig to the other.

In addition to the usual longitudinal rolling, the specifications on this job required diagonal rolling across the width of the runway. To do this, the contractor tried to complete the entire width of the runway over a relatively short length each day, rather than place long strips over only a small part of the width.

This meant placing relatively short strips (always less than 1,000 feet) and moving back many times with the pavers. To speed up this type of operation, and to eliminate the possibility of the longitudinal joints in the top lift being directly above the joints of the binder courses, the contractor used the two pavers with different widths but operated both of them with the same crew. One machine started a lane and moved ahead



Solution handles

Special abrasive special bitu out pave

You always ing Culvert Wheeling plants a City, Lo

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Where head special solid

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done, at the work progre repairs vantag joints In t Spring made diately ton tax tudina wheel Late t rubber rerolle The tack c before On con

Solution: Wheeling Large Diameter Corrugated Metal Culvert Pipe easily handles peak stream flow . . . absorbs shock created by logging trucks.

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For more facts, use Request Card at page 18 and circle No. 301

FEBRUARY, 1961

done, the field mechanics pulled it off at the end of any strip and did the work there without holding up the progress of the job. This helped keep repairs at a minor level. Another advantage was that there were hot joints all the way across the runway.

In the rolling sequence, a Buffalo-Springfield 3-wheel 10-ton roller made the breakdown pass immediately behind the pavers. A B-S 10-ton tandem followed. The final longitudinal pass was made by a Bros 9-wheel self-propelled rubber-tire roller. Late that day, or the next day, the rubber-tire roller and the tandem rerolled the area diagonally.

The binder course was given a light tack coat of RS-1 emulsified asphalt before the second course was laid. On completion of the surface course,



In the field for Porter W. Yett are, left, Mike Farber, general super and Clarence Cannon, superintendent of grading and base operations.

a seal coat of RC-2 cutback asphalt was applied at a rate of about 0.2 gallon per square yard, and an application of 12 to 15 pounds of cover sand per square yard was spread and rolled into the seal.

Personnel

Mike Farber, general superintendent for Porter W. Yett, spent quite a bit of time giving the job his personal over-all supervision. William Lind was paving superintendent, and Clarence Cannon superintended the grading and base operations.

For the Port of Portland, R. A. Neumelster is chief engineer. Robert Dow is construction engineer on the airport improvements, including this contract. George White was chief inspector.

THE END

tion. After these rigs had achieved the required 100 per cent density, the entire first lift was proof-rolled with the 45-ton proof roller, and any areas that failed to have the specified density were recompacted.

The second lift of base was applied and compacted in the same manner, but less proof rolling was required.

The 10-inch base was not primed until 24 to 96 hours before it was paved. The priming operation was done with 0.15 gallon per square yard of MC-1 cutback asphalt applied by a Rosco distributor. Spex required paving within 96 hours after priming.

One crew uses two pavers

The asphaltic concrete for the two lifts of paving was produced in Yett's stationary plant in the gravel pit. This is a Madsen 4,000-pound batch plant. The 1½-inch binder course required 17,500 tons of mix with a maximum 1-inch aggregate and contained about 5 per cent asphalt. The 16,000 tons in the 1½-inch surface course had a maximum ¾-inch aggregate and contained between 5½ and 6 per cent asphalt. Both mixes were designed for high stability.

A fleet of International 10-wheel-

67

Metal-lath group offers specifications for 1961

■ The Metal Lath Manufacturers Association, Cleveland, Ohio, has released its 1961 Specifications for Metal Lathing and Furring.

The new edition contains basic design criteria for lathing of hollow and solid partitions, ceilings, furring, stucco, plaster reinforcements, columns, and other assemblies. Details are included on the use of rib metal lath with portland-cement plaster in residential and other types of buildings.

The association has also published a revised "Metal Lath Specification Check List," Technical Bulletin No. 19. Subjects discussed are scope of work, materials, samples, workmanship, installation, partitions, vertical furring, membrane fireproofing, ceilings, and stucco.

Newly prepared information on metal-lath vertical furring is contained in Technical Bulletin No. 14, "Vertical Furring."

All three publications may be obtained by writing to the association, Engineers Bldg., Cleveland 14, Ohio.

Gibbs & Hill pamphlet

■ Gibbs & Hill, Inc., consulting engineering firm of New York, N. Y., has published a pamphlet, "Competence," telling of its engineering services throughout the world. A special section is included telling how the firm handles a project, with attention to research and development, reports and economic studies, preliminary engineering and design, process development, detail engineering, etc.

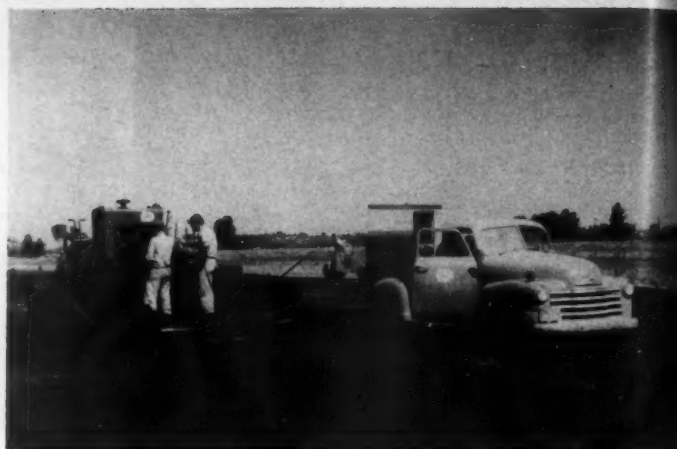
The pamphlet is available without charge from Gibbs & Hill, Inc., Pennsylvania Station, New York 1, N. Y.

B-L-H division opens district office

■ The Construction Equipment Division of B-L-H has opened a district office



A pair of Utility trailers, hauling 12 yards to the load, are positioned by an International truck to spread a load of base material on the grade at an intersection of the runway and a taxiway.



Field mechanics make a minor repair to one of the B-G finishers while the crew finishes a strip with the second rig. Maintenance work did not have to hold up production, and crews were always assured that finishers were in top shape.

(Continued from preceding page)

ers hauled the mixes from the plant to two Barber-Greene finishers on the runway. The two finishers were worked on adjacent lanes by a single crew that alternated from one rig to the other.

In addition to the usual longitudinal rolling, the specifications on this job required diagonal rolling across the width of the runway. To do this, the contractor tried to complete the entire width of the runway over a relatively short length each day, rather than place long strips over only a small part of the width.

This meant placing relatively short strips (always less than 1,000 feet) and moving back many times with the pavers. To speed up this type of operation, and to eliminate the possibility of the longitudinal joints in the top lift being directly above the joints of the binder courses, the contractor used the two pavers with different widths but operated both of them with the same crew. One machine started a lane and moved ahead until it reached the station at the end of the day's paving. While one man was moving it back, the rest of the crew worked with the other machine, paving to approximately the same station. This continued until the full width of the runway was paved.

There were a number of advantages to this operation, not the least of which was the standby feature. If either of the pavers needed work



This Bros 9-wheel self-propelled rubber tire roller works in a straight longitudinal direction to make the third pass. Final rolling—diagonal rolling—is usually done the next day, by the rubber-tire roller and a tandem.



TO STAY ON SCHEDULE, DE



Trip-saving V-8 power! Compact-design INTERNATIONAL dump models can give you extra trips every day. Advanced 345 cu. in. V-8 engine, combined with optional Select-O-Matic® transmission, means pull-ahead power on the highway... smooth power application under all conditions. Ideal for fast runs to mix plant or dump site. Tandem-axle models to 35,000 lbs. GVW.



Off-road, it'll do anything you could ask of a truck! 230 Series INTERNATIONAL Trucks go into construction areas, come out with giant-size loads. Extra heavy-duty frame and front end take all kinds of punishment — and you can get all kinds of power. Gasoline "sixes" up to 212 hp., V-8's to 257 hp., diesels up to 262 hp. with 695 lb.-ft. of torque. GVW ratings to 73,000 lbs.

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In the rolling sequence, a Buffalo-Springfield 3-wheel 10-ton roller made the breakdown pass immediately behind the pavers. A B-S 10-ton tandem followed. The final longitudinal pass was made by a Bros 9-wheel self-propelled rubber-tire roller. Late that day, or the next day, the rubber-tire roller and the tandem rerolled the area diagonally.

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B-L-H division opens district office

■ The Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, has opened a new eastern district office and factory-parts warehouse at 426 U. S. Highway No. 1, Newark, N. J.

The structure will house complete parts-sales and service departments for Lima shovels and cranes, Lima Austin-Western crushing and screening equipment, Lima Madsen asphalt plants, and the Lima Roadpaver.

Carl Gill is district manager, and Dave Pagliaro is parts manager.

Mechanical-electrical equipment for schools

■ The "Mechanical-Electrical Equipment Handbook for School Buildings," by Harry Terry, has been published by John Wiley & Sons, Inc.

The book, written in nontechnical language, is devoted exclusively to the installation, care, and use of mechanical and electrical equipment of school buildings.

The 412-page handbook is available from the publisher at 440 Park Ave. South, New York 16, N. Y. The Price is \$9.50.



SURE TRACTION UNDERNEATH YOUR PAYLOADS! Rugged INTERNATIONAL R-Line models save valuable time by eliminating bog-downs and slowdowns. Six-cylinder engines up to 501 cu. in. displacement are available with gasoline or LPG power. Gear reduction of over 100-to-1 multiplies engine torque to tandem axle to assure smooth, powerful performance. Diesel engines optional. Ratings to 53,000 lbs. GVW.

LE, DEPEND ON INTERNATIONAL!

Need a dump truck right away? Call on INTERNATIONAL right now! Dump truck models of popular sizes and specifications are ready for shipment within 24 hours from the INTERNATIONAL Truck Sales Processing center. A "pool" has been established to anticipate your emergency needs and equipment demands. Keep your job on schedule—contact your INTERNATIONAL Truck Dealer or Branch today!

INTERNATIONAL TRUCKS WORLD'S MOST COMPLETE LINE **IH**

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

For more facts, use Request Card at page 18 and circle No. 302

Convention Calendar

February 5-9 Associated Equipment Distributors

Annual convention, Statler-Hilton Hotel, Los Angeles, Calif. W. G. Bowman, convention manager, AED, 30 E. Cedar St., Chicago, Ill.

February 6-8 Association of Asphalt Paving Technologists

Meeting, Hotel Francis Marion, Charleston, S. C. Ward K. Parr, secretary-treasurer, AAPT, 1124 E. Engineering Bldg., University of Michigan, Ann Arbor, Mich.

February 13-14 Georgia Highway Conference

Annual conference, Georgia Institute of Technology, Atlanta, Ga. Director, Short Courses and Conferences, GHC, Georgia Institute of Technology, Atlanta 13, Ga.

February 15-17 Northwest Highway Engineering Conference

Conference, More Hall, University of Washington, Seattle, Wash. Roy Sawhill, professor of civil engineering, NHEC, More Hall, University of Washington, Seattle 4, Wash.

February 20-23 American Concrete Institute

Fifty-seventh annual convention, Chase Park Plaza Hotel, St. Louis, Mo. William A. Maples, secretary-treasurer, ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

February 23-24 Mississippi Highway Conference

Seventh annual conference, Center for Continuation Study, University of Mississippi, Oxford, Miss. W. M. Jones, Jr., director, Department of Conferences and Institutes, MHC, University of Mississippi, Oxford, Miss.

February 24-25 Highway Engineering Conference of the University of Colorado

Thirty-fourth annual conference, University Memorial Bldg., Boulder, Colo.

R. C. Rautenstrauss, professor and chairman, department of civil engineering, HEUC, University of Colorado, Boulder.

February 27-March 2 Associated General Contractors of America

Annual meeting, Statler-Hilton Hotel, Boston, Mass. James D. Marshall, executive director, AGC, 20th and E Sts., Washington 6, D. C.

February 28-March 2 Illinois Highway Engineering Conference

Forty-seventh annual conference, Illini Union Bldg., University of Illinois, Urbana, Ill. John W. Hutchinson, assistant director, IHEC, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

March 1-2 Kentucky Highway Conference

Conference, University of Kentucky, Lexington, Ky. D. E. Blythe, head, Civil Engineering Department, KHC, University of Kentucky, Lexington, Ky.

March 2-3 Illinois Traffic Engineering Conference

13th annual conference, Illini Union Bldg., University of Illinois, Urbana, Ill.

For more facts on insert, use Request Card at page 18 and circle No. 304

John E. Baerwald, traffic conference director, ITEC, 404 Civil Engineering Hall, University of Illinois, Urbana, Ill.

March 5-8 American Road Builders Association

Fifty-ninth convention, Chalfonte-Haddon Hall, Atlantic City, N. J. ARBA, World Center Bldg., Washington 6, D. C.

March 7-9 College of the Pacific Highway Conference

Conference, College of the Pacific, Stockton, Calif. Adelbert Dieffendorf, dean, School of Engineering, CPHC, College of the Pacific, Stockton, Calif.

March 13-17 National Association of Corrosion Engineers

Seventeenth annual conference and 1961 Corrosion Show, Hotel Statler, Buffalo, N. Y. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 1, Texas.

March 15-17 Short Course for Superintendents and Operators of Water and Sewerage Systems

Twenty-fourth annual course, Pleasant Hall, Louisiana State University, Baton Rouge, La. General Extension Division, Pleasant Hall, Louisiana State University, Baton Rouge, La.

March 19-25 American Society of Photogrammetry

Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ASP, 1515 Massachusetts Ave. N.W., Washington 5, D. C.

March 27-30 Purdue Road School

School, Purdue Memorial Center, Purdue University, Lafayette, Ind. J. F. McLaughlin, associate professor of civil engineering, Civil Engineering Building, Purdue University, Lafayette, Ind.

April 4-5 Earthmoving Industry Conference

Twelfth annual conference, Pere Marquette Hotel and Madison Theatre, Peoria, Ill. Irwin Joelin, publicity chairman, EIC, P. O. Box 973, Peoria, Ill.

April 4-6 Ohio Highway Engineering Conference

Conference, Ohio State University, Columbus, Ohio. Emmett H. Karrer, professor of highway engineering, Ohio State University, 2036 Neil Ave., Columbus 10.

April 4-6 New York State Association of Highway Engineers

Meeting, Hotel Statler Hilton, Buffalo, N. Y. Edward W. Umiker, general chairman, NYSAHE, Box 12, Niagara Square Station, Buffalo 1, N. Y.

April 17-21 American Welding Society

Forty-second annual convention and Welding Exposition, Commodore Hotel and the Coliseum, New York, N. Y. Arthur L. Phillips, secretary of information and education, AWS, 33 W. 39th St., New York, N. Y.

April 18-20 South Dakota Highway Short Course and Bituminous Conference

Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

April 23-26 Canadian Association of Equipment Distributors

Annual meeting, Hotel Vancouver, Vancouver, B. C., Canada. A. MacNamara, managing secretary, CAED, 409 Journal Bldg., 247 Queen St., Ottawa, Ont., Canada.

April 27-29 Texas Aggregate Association and Texas Ready Mix Concrete Association

Meeting, Robert Driscoll Hotel, Corpus Christi, Texas. Ray L. Cain, executive secretary, TAA and TRMCA, 201 Perry Brooks Bldg., Austin, Texas.

Diamond Chain opens branch in Dallas

Diamond Chain Co., Inc., Indianapolis, Ind., a subsidiary of American Steel Foundries, Chicago, recently opened a branch in Dallas, Texas.

The warehouse will provide one-day delivery to customers in Texas, Louisiana, Oklahoma, Mississippi, Arkansas.

CONTRACTORS AND ENGINEERS

HOW TO TAKE TIME AND WORK OUT OF PIPE LINE INSTALLATION



To help contractors get the job done faster, easier and more economically, NAYLOR offers a pipe and coupling combination to simplify pipe line installations.

NAYLOR's exclusive lockseamed, spiral-welded structure gives you pipe that is light in weight without sacrifice of strength and safety. It's easy to transport, handle and install—saves time, trouble and money right down the line.

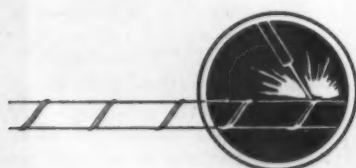
WEDGELOCK couplings fit into this economy picture, too. They simplify and

NAYLOR Wedgelock couplings make a positive connection, securely anchored in standard weight grooved ends.

speed connections since a hammer is the only tool required to connect or disconnect them, and joints can be made up with only one side of the pipe in the open.

For air, water and ventilating service, it will pay you to consider this dependable NAYLOR pipe and coupling combination.

Write for Bulletin No. 59.



NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 303

Joint consulting service for community planning

A joint consulting service, designed to help communities in solving growth and modernization problems, has been formed by Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y., and Raymond & May Associates, Pleasantville, N. Y.

The service will include community planning, zoning, urban renewal, etc.

Lockwood, Kessler & Bartlett is currently engaged in design and construction supervision of portions of the Long Island Expressway.

Raymond & May, recently retained as consultants in the preparation of a \$2,250,000 community renewal program for New York City, has opened a New York office.

GM Diesel offers course on diesel-electric sets

The Detroit Diesel Engine Division of General Motors, Detroit, Mich., is offering a specialized training course on the installation, operation, and maintenance of standby diesel-electric sets.

The course, an addition to the division's regular service training program, is open to personnel of companies that have or plan to install these units for emergency standby use. It will last for two weeks, with classes limited to 12 members, and will be held at the division's Training School in Detroit.

Details about the course and available dates may be obtained by contacting Detroit Diesel distributors, or by writing to the Detroit Diesel Engine Division, Product Service Training School, 13400 W. Outer Drive, Detroit 28, Mich.

Fire-resistance ratings for prestressed concrete

The Board of Examiners of the City and County of San Francisco has established definite fire-resistance ratings for prestressed-concrete construction based on recommended concrete covers for the prestressing steel.

The Board recently voted unanimously to recognize prestressed-concrete construction on the basis of specifications outlined in the Uniform Building Code, one of the four major building codes used in the U. S., and the primary one used in the 11 western states.

The ratings are in close accord with those of the American Concrete Institute and the American Society of Civil Engineers' Joint Committee 333 Recommendations for Prestressed Concrete.

Worthington appoints

Worthington Corp., Harrison N. J., has named Edward F. Buhler distribution representative for the company's full line of construction equipment in the central area. He will cover West Virginia, Kentucky, Tennessee, southern Ohio, and southern Indiana.

Buhler was previously a district manager for Davey Compressor Co.



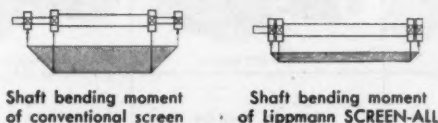
USED FOR HAULING CRUSHED STONE, this Ford Model F-800 repowered with a lightweight C-160 Cummins diesel engine has cut delivery costs for the Nello L. Teer Co., Durham, N. C. The tractor pulls a 20-ton-capacity trailer dump and averages 8 miles per gallon as compared to 4.75 for similar gasoline-powered trucks. Drivers say they seldom use low gear with the "Stop & Go" diesel, which is said to use four times less fuel per hour when idling than gasoline engine use.

Here's why you cut your cost/ton specified with LIPPMANN vibrating screens

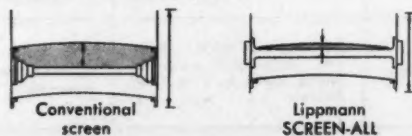


You get sharper sizing action since the entire weight of vibrating body is carried by the shaft. This allows a truly perfect-circle throw, without need for vibration dampening guy cables and springs. And results in maximum tumbling action, greatest particle contact for highest screen efficiency.

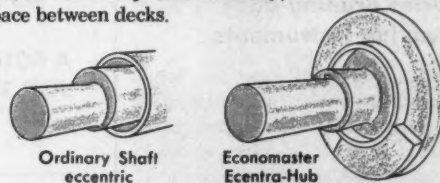
You get longer life with lower maintenance costs with SCREEN-ALL hub-mounted bearings. This design feature reduces shaft bending moment to a fraction of that of conventional screens, and permits larger bearing surfaces than on other screens of comparable rating. Further, eccentric hub permits perfect counterbalancing so no fatiguing strains and stresses are transmitted to screen frame.



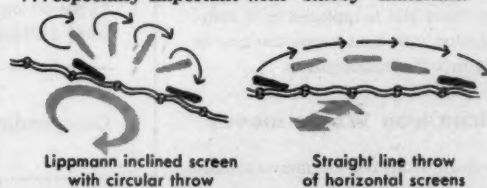
You need less head room. Conventional shaft-mounting wastes space. On SCREEN-ALL, all four bearings are mounted outside screen body. This permits shaft to be moved up to 8" closer to deck... without any sacrifice of material flow.



Now, for the first time you can adjust the eccentric throw of a two-bearing screen... to compensate for load conditions. With exclusive Ecentra-Hub, eccentric weights are no longer fixed within the shaft, but are now placed on the hub assembly where they are fully adjustable. As a result you get an eccentric action which actually creates throw, and allows you to maintain high screening efficiency over a wide variety of conditions. Also, design permits a two-bearing screen with a uniform cross-section shaft for greater reliability and economy, and far less dead space between decks.



You get two-way, production-boosting tumbling action. Efficient circular throw, plus action of gravity on inclined screen impart a live tumbling action that gives maximum screen contact to all sides of particles... especially important with "slabby" materials.



LIPPMANN
ENGINEERING WORKS, INC.
Milwaukee 14, Wisconsin

Yes, Lippmann makes horizontal screens, too!

Clip and mail for facts... Address to: Dept. CE-1
LIPPMANN ENGINEERING WORKS, INC., Milwaukee 14, Wisconsin
Please send me details on how I can boost production and cut my screening costs.
I'm interested in
Name
Company
Address
City Zone State U.S. 1-61



Keeping the cost of gravel subbase near the estimate was the big problem for contractors on a new interstate job near Danbury, Conn. When the time came to buy, prices soared and the firms had to work hard to hold costs down on this item. The P&H 1055 is loading a Ford truck in one of the pits being worked.

Euclid releases film on TS-14 scraper

■ The Euclid Division of General Motors Corp. has released a 16-mm motion picture showing the versatility and operation of the Euclid all-wheel-drive Model TS-14 scraper with 14-yard struck capacity.

The 12-minute sound and color film illustrates how this "little twin" aids the efficient performance of small and medium-sized jobs, broadens work scope, lengthens the working season, and reduces equipment needs.

The film may be obtained for showing to interested groups by writing to the Advertising Department, Euclid Division, General Motors Corp., Cleveland 17, Ohio, or by contacting your local Euclid distributor.

New Trojan sales manager

■ The Yale & Towne Mfg. Co.'s Trojan Division, Batavia, N. Y., has appointed George E. Gunther domestic sales manager for its tractor-shovel line.

Gunther was formerly sales manager, western region, for The Thew Shovel Co. His new headquarters will be at the Trojan home office in Batavia, N. Y.

Charles Bruning adds surveying instruments

■ The Charles Bruning Co., Inc., Mt. Prospect, Ill., maker and distributor of architectural and engineering equipment, has become exclusive distributor in the United States for surveying instruments manufactured by Cooke, Troughton & Simms, Ltd., York, England.

Featured in the Cooke line is a self-aligning level, in which the main spirit level vial is replaced by a compensating unit that keeps the line of sight in a horizontal plane.

Vulcan Iron Works moves

■ Vulcan Iron Works, manufacturer of steel hammers and pile-driving equipment, has moved its offices from Chicago, Ill., to Chattanooga, Tenn. The complete moving operation, handled by Aero Mayflower Transit Co., Inc., Indianapolis, was handled during a weekend. Vulcan closed its doors in Chicago on a Friday and opened for business in Chattanooga on Monday morning.

Pit owners wreck estimates on gravel, but economical jobs on interstate help

Contractors weather

Contractors and Engineers staff article

Gravel procurement at a firm price was the big problem for contractors on three of the five contracts covering 17 miles of Interstate 84 in the vicinity of Danbury, Conn. This highway project calls for two 24-foot concrete roadways with 10-foot asphaltic-




concrete shoulders, separated by a divider strip. Pavement will be laid this coming season. Spex call for a 24-inch gravel subbase in rock cuts and 12 inches in earth sections.

Work on drainage, bridges, and grading moved along on schedule for the contractors, but getting firm commitments on bank gravel from

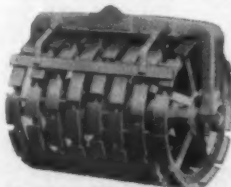
Kompactor averages 3,000 lineal feet per day compacting 6-inch soil-cement base on road paving project.



A ROLLER THAT'S JUST RIGHT FOR YOU!

			
	Small tandems	Two-axle tandems	3-wheel rollers
Capacities	3-5 TON TANDEM 4-6 TON PORTABLE	5-8 TON 8-10 TON 8-12 TON 10-14 TON	10-14 TON 12-15 TON
Type of compaction best suited for	Roll and run jobs — driveway, parking lot and playground work. Patching, light finishing.	Heavy-duty surface finishing of asphalt. Sealing off fill surfaces. Compacting granular soils.	Fine grade finishing. Handle a variety of materials in fills, subgrades, and unfinished bituminous pavements.
Outstanding Features	Two speed mechanical transmission. Hydraulically powered towing wheels on 4 to 6 ton Portable.	Dual control. Adjustable bevel gear final drive. Single unit power train. Low maintenance.	Heavy-duty power brakes. 4-Speed transmission. Easy access to all working parts.

Segmented roll for Buffalo-Springfield Tandem Rollers provides 3 to 7% higher compaction densities.



A quick change of guide rolls on any big Buffalo-Springfield tandem roller can give you up to 7% higher compaction densities on stabilized base materials, crushed stone, earth fills, etc. You get the special advantages of a projecting-lug roll, plus those of a smooth-faced roll in a single pass — at very low cost!

the rice squeeze on subbase item

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individual property owners was a costly major operation.

Of the five sections, L. G. Defelice & Son, Inc., North Haven, Conn., holds two. On these, the total gravel requirement for roadway subbase and backfill for structures exceeds 300,000 cubic yards.

A supply of gravel was available in

the area: state-accepted material could be had at four sites, and the maximum haul was three miles. Before the jobs were let, this gravel sold for 15 to 25 cents a yard.

As is usual prior to bidding, no firm quotations were received from property owners following prebid inquiries on availability and price. But



Arute Bros., New Britain, Conn., one of the contractors, had haul trucks stockpile gravel at the midpoint so that a Bucyrus-Erie 54-B could rehandle the material to Euclids. The company owns the shovel and "Eucs"; the only added expense was operator and oiler wages.

using a recap of inquiries, the contractor figured the gravel would sell for 25 cents a yard. After he was awarded the job, Defelice discovered

that this price would not hold.

One property owner, for instance, quoted 35 cents a yard for the gravel and limited the sale to small yardage. The contractor took 20,000 yards from this pit.

Another owner, who had indicated he might sell for 25 cents, asked 50 cents. Later, when this price was accepted, the owner decided not to sell.

In a third situation, after about 25,000 yards had been bought at 50 cents, the price was raised to 75 cents and the contractor pulled out.

Several sources produced a total of 60,000 yards at 25 cents. The cost of stripping and cleanup, plus moving in and out, made small pit operation undesirable.

Defelice, instead of working three or four gravel pits with short hauls, had to probe sixteen possible sources and wound up working nine different sites.

Gravel at a price of 35 cents a yard was obtained from pits east of Danbury. This required a haul of 7 miles through traffic to contract locations west of the city.

How to Pick COMPACTION EQUIPMENT That Best Fits Your Needs

No matter how complex your problems are, you can buy with confidence from Buffalo-Springfield. Compaction is our business. Our line is most complete. And with a wealth of past experience to draw on, we can help you pinpoint the most profitable compaction piece

to fit your particular needs. Talk it over with a Buffalo-Springfield man soon. Let him show you how to make your compaction dollar meet density specs in fewer passes . . . with less maintenance and downtime. Ask your Buffalo-Springfield man for complete information.



3-axle tandems

13-20 TON

Asphalt finish-rolling. Sealing fill surfaces. Compacting granular soils, stabilized base courses.

Walking beam control for extra compactive effort. Hydraulic control for raising center roll.



Vibratory roller

15-21 TON

Compacting base course, surface sealing, and ideal for a large variety of granular base material compaction problems.

Delivers 1500 to 2200 vpm. All vibratory effort is exerted downward for greater density in deeper lifts.



Kompaactor

K-45 . . . 16 TON

Handles wide variety of materials in base fill compaction, at high speed.

Segmented wheel roller. Works on interrupted pressure principle. Delivers higher densities in fewer passes.



Pneumatic Rollers

3-10 TON
10-30 TON

Heavy duty force account compaction. Compacted embankment work. All types of soil.

All wheel oscillation. Torque converter drive. Power steering and brakes. 3-Speed transmission.



A P&H crane sets a 90-foot girder for a dual bridge that will span a railroad near the Danbury Fairgrounds interchange.

The cost of material at the pits averaged about 35 cents a yard. The in-place bid price for the subbase gravel item was 95 cents a yard on one section and \$1 on the other. Allowing a haul cost of 70 cents, plus 25 cents to load and spread, it is possible that the average total cost per yard of subbase gravel in place was in the neighborhood of \$1.30.

Economical earthwork and structures operation could, however, offset the difficulties with the gravel item. Excavation quantities for both contracts totaled 2,300,000 yards of earth,

Write for bulletin on the compaction equipment of your choice or see your distributor soon.

BUFFALO-SPRINGFIELD CO.
Springfield, Ohio

K A Division of
OEHRING
Company

B100

For more facts, use Request Card at page 18 and circle No. 306



A number of bridges are included in the contracts; this one is enclosed with Visking polyethylene sheeting to retain salamander heat while a P&H 355 places concrete with a lay-down bucket. A Rex mixer on an International makes the delivery.



On the road, a Mack dumps gravel to an Allis-Chalmers HD-5 that handles the spreading operation.

360,000 yards of rock and 1,200,000 yards of borrow.

Started in the fall of 1959, grading was 99 per cent completed in November of 1960.

Situated between the Defelice projects is a \$3,300,000 contract for construction of the Danbury Fairgrounds Interchange, including the intersection of U. S. 6 and U. S. 7. Oneglia & Gervasini, Inc., Torrington, Conn., is the contractor.

Procurement of 96,000 yards of gravel was the problem here. But the firm operated the same way as Defelice, using similar sources.

In direct contrast with highway projects west of Danbury were the two sections east of the city. This area offered acceptable gravel, easily obtained, and with short hauls.

Gravel on right-of-way

Frouge Construction Co., Inc., Bridgeport, Conn., has a 4-mile section amounting to \$4,135,000. This project called for 165,000 yards of gravel, of which 25,000 yards was available within the right-of-way. The balance came from three sources that involved average hauls of 2 miles.

Quantities for the Frouge contract include 815,000 yards of earth and 343,000 yards of rock. There are seven single and two dual bridges on this section.

Arute Bros., Inc., New Britain, Conn., holds the contract adjoining the Frouge section. This is a 3½-mile job costing \$3,830,000. There are five bridges on this project. Rock excavation amounted to 700,000 yards; the earth total was 463,000 yards.

The contract required 140,000 yards of gravel, and Arute got it from one pit. The average haul was 3 miles.

All the projects, under the direction of the Connecticut State Highway Department, are scheduled for completion this fall. **THE END**

Traffic engineering discussed in book

■ "Roads and Their Traffic," published by the Philosophical Library, Inc., contains articles by 13 experts on the subject of traffic engineering, and is designed to inform the reader of ways in which this branch of engineering can help improve road systems and raise their capacity, thus easing the flow of traffic. The book gives practical examples of the functions of the traffic engineer and of the methods and techniques he uses.

Subjects discussed are: national and regional motorways in Britain

and continental Europe; urban motorways and traffic control; the parking problem; road signs and markings; road lighting; road and traffic research; the administrative structure; and road safety. Numerous photographs, charts, and drawings illustrate the text, and a glossary of common traffic-engineering terms is included.

The book may be obtained from the Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y., at \$12 per copy.



CHEVROLET IF S "WALKS" WHEELS OVER TRUCK-BUSTING BUMPS!

FRONT INDEPENDENT SUSPENSION

Chevrolet truck wheel action on rough road surface as depicted by 4-stage stop-action photography.

NBCA conducts study on moisture in pavements

As part of its 10-point quality-improvement program, the National Bituminous Concrete Association, Washington, D. C., is conducting a study to determine the allowable moisture content in bituminous-concrete pavements.

The first step in the study will be to determine the moisture content in existing pavements located in 11 representative states covering the various climatic conditions in the United States. Six test samples from each

of these states will be mailed to the Chicago Testing Laboratory, Chicago, Ill., which is conducting the research in cooperation with NBCA's research coordinator, Charles R. Foster.

States participating in the study are: Alabama, California, Florida, Kentucky, Michigan, Minnesota, New York, North Carolina, Oklahoma, Texas, and Washington.

The study is based on the theory that hot-mix pavements accumulate a small amount of water over a period of time. The association hopes to determine the lower level of moisture actually in the samples. If this level

approaches existing construction limits, NBCA officials reason that this provides a base below which there is no need to dry the aggregate, thus enabling contractors to save on construction costs.

Book on terramechanics

"Off-the-Road Locomotion," by M. G. Bekker, has been published by the University of Michigan Press, Ann Arbor, Mich.

An addendum to the author's previously published theory of land locomotion, the 220-page book offers or-

ganized research on the vehicle as a unit in relation to environmental terrains and attempts to demonstrate the possibility of describing all the varieties of engineering-soil vehicle relationships in mathematical form.

The book illustrates how predictions can be made of vehicle performance and design parameters, and covers soil and snow mechanics, tracks, wheels, and tires, general factors relating to vehicles at assumed optimum performance, and research developments in the fields of industry and education. Also included are 192 illustrative figures, an appendix, a list of symbols, references, and an index.

The book priced at \$10 may be ordered from the University of Michigan Press, Ann Arbor, Mich.

"WALKING WHEELS" KEEP CHEVY IN COST-SAVING SHAPE!

CHEVROLET I.F.S. PROTECTS YOUR PROFITS THESE THREE WAYS:

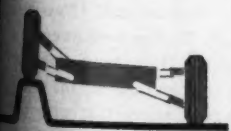
Rides down high maintenance costs. When a bump looms up, Chevy's independently suspended front "walk" right over it. Most road shocks and jolts never reach the chassis, cab or body. The truck smoothly, takes less of a beating, stays in cost-saving shape longer. Your income doesn't dribble away in repair bills. And you don't lose money through excessive downtime, either.

Rides cargoes over rough spots with less damage . . . minimum loss. Thanks to those same "walking wheels," loads don't do much bouncing in the body of a '61 Chevy truck. That means you don't have to contend with undue cargo damage that eats away at your earnings. (Chevy's load-tailored rear suspension protects cargoes, too.) This sure protection for fragile loads—and profits—is standard in 1961 Chevrolet trucks of every weight class.

Rides drivers through with less fatigue—for tighter schedules. Wait till you see how Chevy front wheel action works to eliminate tiring shimmy and steering-wheel fight. It means that the man at the controls stays there longer with less fatigue—stay on schedule and do a bigger day's work. (Another reason you can look for faster schedules is that Chevy's bump-beating wheel action allows faster safe speeds on rough roads.)

That gives you an idea of how Chevy Independent Front Suspension works to move you ahead in the money-making department. And it's available in 165 Chevrolet models for '61, from new Corvair 95's to 40,000-lb. GVW tandems. Check it out with a demonstration ride at your Chevrolet dealer's, sometime soon. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

INDEPENDENT FRONT SUSPENSION



In Chevy, each front wheel, suspended independently, is free to step cleanly over bumps (see left). Each works smoothly to reduce objectionable jolts so characteristic with I-beam axle design (right). Working with load-tailored rear suspensions in every weight class, I.F.S. provides the basis for profit-protecting performance that's unmatched by I-beam axle trucks.

I-BEAM AXLE DESIGN



1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

For more facts, use Request Card at page 18 and circle No. 307

Weight?
Measurements?
Age?

STA-CRETE 15 —

8 pounds=1 gallon
400 square feet=1 gallon
AGE—UNLIMITED

STA-CRETE 15 —

UNADULTERATED
No Solvents — No Fillers

STA-CRETE 15 —

AN EPOXY

- that Bonds Concrete
- Waterproofs
- Resurfaces
- Decorates

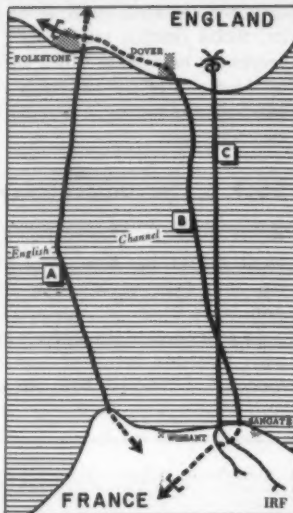
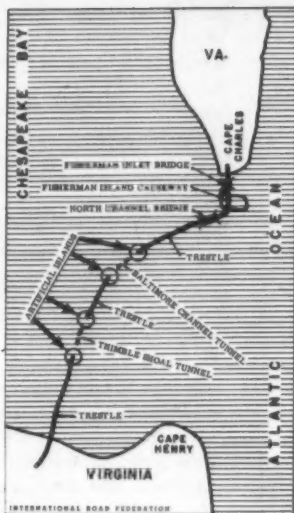


STA-CRETE Inc.,
115 New Montgomery,
San Francisco 5, California

Name _____
Address _____
City _____
State _____
Position _____
Company _____
Phone _____
P.S.

You're an Estimator * *
By accurately calculating the age,
weight and measurements of our gal —
a Sta 'N Play kit is yours.

For more facts, use coupon or circle No. 308



Comparison of Bridge and Tunnel Projects

Chesapeake Bay		English Channel		
		A	B	C
Length (miles)	17.5	26	32	21
Cost (U.S. dollars)	\$139 million	\$567 million	\$310 million	\$510 million
Minimum Height Above Water (feet)	23	(under water)	(under water)	170
Depth of Channel (feet)	50	160	160	(above water)

Profile of the Chesapeake Bay Bridge-Tunnel Project

ILLUSTRATED AT FAR LEFT IS THE BRIDGE and tunnel crossing at the entrance of Chesapeake Bay. Now under construction, the project will cost \$139 million and extend 17.5 miles. The crossing has 12 miles of trestle 30 feet above mean low water, four man-made islands to connect with two tunnels beneath the main ship channels, and two high-level bridges over secondary ship channels. Proposals for an English Channel crossing are next. They include (A) a road and railway tunnel of 26 miles, (B) a railroad tunnel of 32 miles, and (C) a highway and railway bridge of 21 miles.

Get more work done . . .



***the "Euc" C-6
tops them all
for versatility!***

The easy operation, fast response and all-around work-ability of the Euclid C-6 make it the outstanding crawler in the 200 h.p. class. Proven Torqmatic Drive provides full power shift and instant reverse with no delay for clutching... with a flick of the wrist you change direction or speed range. Dependable GM 6-71 engine delivers 211 net h.p. to the power train... common steering-braking contributes to easy operation and exceptional maneuverability under all working conditions.

And there's nothing that comes close to the C-6 for service accessibility that cuts downtime and pays off in more work-ability. Unitized assembly of major components cuts repair and replacement labor costs to the absolute minimum... well below those for comparable tractors.

EUCLID Division of General Motors
Cleveland 17, Ohio

*Plants at Cleveland and Hudson, Ohio
and Lanarkshire, Scotland*

Get all the facts and figures on the C-6 . . . you'll find that low operating cost plus reliable performance on the toughest jobs make it your best tractor investment.

DOZING and RIPPING . . . plenty of power, good stability and exceptional maneuverability make the C-6 a top performer in rough work and heavy material.



EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, use Request Card at page 18 and circle No. 332

PCA releases new films

■ Two new 16-mm sound and color films have been released by the Portland Cement Association, Chicago, Ill.

"Casting and Erecting Concrete Curtain Walls" deals with various methods used to cast and put in place decorative wall panels. Such subjects as rubber plastic form liners, plaster of Paris forms, and exposed-aggregate techniques are covered.

The 22-minute motion picture is a sequel to PCA's recent film, "Concrete Curtain Walls," which presents the completed buildings to the viewer.

"How to Build New Shapes in Concrete" examines several techniques used in the construction of concrete shell roofs, including prestressing and the pneumatic spraying of concrete. The 19-minute film serves as a companion to the recently released "New Shapes in Concrete," which illustrates the architectural versatility of shell roofs.

Both films are available on loan from PCA's 35 district offices in major cities of the U. S., including Hawaii, and in Vancouver, B. C., Canada.

Worthington directors

■ Donald C. Power and Frank J. Nunlist have been elected to the board of directors of Worthington Corp. Harrison, N. J.

Power is chairman of the board and chief executive officer of General Telephone & Electronics Corp., and Nunlist is vice president of operations for Worthington.

I-H division receives Army Engineer award

■ The Construction Equipment Division of International Harvester Co., Chicago, Ill., has been awarded a citation by the U. S. Army Engineer School in recognition of the company's 10-year association with the school in the development of training programs for military use of crawler tractors.

The citation was presented to R. B. Bradley, I-H divisional vice president, in a ceremony at Fort Belvoir, Va.

CONTRACTORS AND ENGINEERS

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GINERS

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Tractor-scrapers are power-shifted, rated at 21 yards



Two new wheel tractor-scrappers, featuring torque-divider power-shift transmission, have been announced by the Caterpillar Tractor Co. The machines are the 4-wheel 630 Series A and the 2-wheel 631 Series A.

Both tractors are powered by a 4-valve-in-head diesel engine, of completely new design, that has a maximum rating of 420 horsepower. The 630A has a top speed of 41 mph; the 631A, 31 mph. Other features reported by the manufacturer include 28-ply 29.5 x 35 tires; "live" air-actuated cable

controls that reduce operator fatigue; advanced-design steering systems for both units; and a high degree of service accessibility.

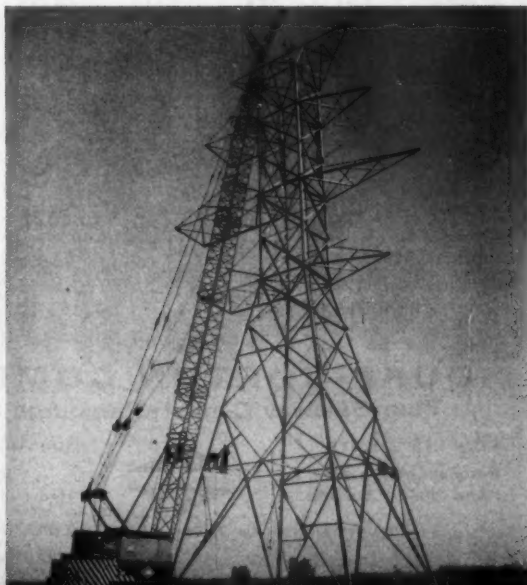
The scrapers are of Lowbowl design, and have a struck capacity of 21 cubic yards, a heaped capacity of 28 cubic yards.

According to the company, a primary feature in the design of these tractor-scrappers is the matched development of the torque-divider power-shift transmission with the new D343 diesel engine.

To shift, the operator need only move the se-

lector lever to one of three speed range positions. Within each range, the most appropriate of three drives is automatically selected to meet changing power requirements. The transmission combines planetary gear groups with a torque converter. The three automatically selected drives are: torque-divider drive, direct drive, and overdrive.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 106.



55-ton-capacity rig has boom to 180 feet

A new high-capacity special crane is offered by the Baldwin-Lima-Hamilton Corp.

Designated Type 65-SC, it has a lifting capacity of 55 tons with a 40-foot boom at 12-foot radius. The boom can be extended to 180 feet for such work as boosting concrete buckets on multistory building construction.

Features include ease of operation and good handling ability; extra-wide crawlers for increased stability; ease of transporting; and a choice of gasoline, diesel, or electric drive.

For further information write to the Construction Equipment Division of the Baldwin-Lima-Hamilton Corp., Dept. C&E, Lima, Ohio, or use the Request Card that is bound in at page 18. Circle No. 107.



Drum design of the BuKaneer accentuates forward weight distribution on the truck frame, provides thorough, fast mixing action.

New transit-mixer line in sizes up to 10 yards

A new line of transit mixers has been introduced by Blaw-Knox Co.

Called BuKaneer, and ranging in size from 4 to 10 cubic yards, these units are available with flywheel power takeoff, front-engine power takeoff, and separate engine power trains.

All three drives feature a heavy-duty transmission that provides four forward and four reverse speeds. In addition, mixer controls, which stress simplicity, include air-electric operation for controlling drum direction.

All controls are positioned forward on the mixer. A tachometer, for indicating drum revolution rate, is standard on all models.

Charging speeds range from 10 to 22 rpm, providing a rate of approximately 5 to 8 seconds per cubic yard. Drum discharge speeds vary from 2 to 22 rpm.

For further information write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, Maitoon, Ill., or use the Request Card at page 18. Circle No. 12.

ESSICK

VIBRATING COMPACTORS



ESSICK VR-72 ON FREEWAY INTERCHANGE

BACKFILL COMPACTION COSTS CUT IN HALF

"On part of this job involving a tremendous backfilling project of more than a dozen bridges, I would estimate," says Jack Yount, "that by using the VR-72 we doubled our production and cut our compaction costs by at least one-half."

TOUGH FILL EASILY REACHES DENSITY IN 1 TO 3 PASSES

Jack Yount, Vice-president and General Manager of Vinnell Constructors states: "We really had a problem when we started compaction operations on the interchange of the new Golden State and San Bernardino freeways. The fill soil was composed of oil shale, a lightweight, light colored shale and black organic material, and in addition, moisture content was 10-15% over optimum. After many passes and long hours of rework, a Sheepsfoot roller reached density requirements calling for 90% on a modified AASHTO test.

"We had successfully used our company-owned Essick VR-54-T compactors in the past, but for this particular fill we chose their larger model VR-72-T. Used in conjunction with the Sheepsfoot Roller (to break up the clods), the Essick 72" vibrator brought the solid density to well above California State Requirements in from 1 to 3 passes.

There is an Essick Vibrating Compactor especially designed to solve your particular compaction problems. The contractor who must achieve higher densities, meet rigid compaction costs and still make every equipment dollar count, relies on ESSICK.



14 models of vibrating compactors from 1 1/2 to 14 tons

FOR COMPACTING ALL TYPES OF SOIL AND BACK FILL MATERIALS, ASPHALT AND GRAVEL

ALSO 14 MODELS OF TANDEM ROLLERS FROM 1/2 TO 14 TONS

ESSICK MANUFACTURING COMPANY

1950 Santa Fe Avenue
Los Angeles 21, California

850 Woodruff Lane
Elizabeth, New Jersey

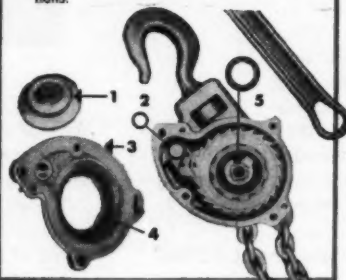
Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 309

New Sealed Aluminum hoist line means easy lifting in any weather!

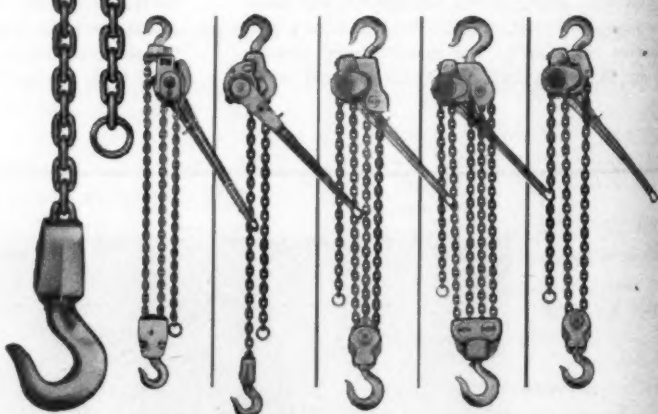


Efficient hoist performance is assured by sealing out moisture, oils, chemicals and dirt from the brake mechanism. Neoprene seal on handle cap (1), load pawl shaft (2), load sheave (3), cover plate (4) and cover plate gasket (5), provide permanent protection under exposure conditions.



Lifting is easy with the Coffing Sealed Disk Brake Lever hoist because the handle pull to lift rated load requires only 57 pounds with the 1/4-ton model to 93 pounds with the 6-ton model. Load spotting is precise—to within minute fractions of an inch. The sealed feature prevents brake slippage under adverse exposure conditions.

The high strength aluminum alloy frame is light—makes for easy portability. Ask your distributor or write for Bulletin ADH-76S.



MA-15
1/4-ton

MA-15-2
1 1/4-ton

MA-30
1 1/4-ton

MA-30-2
3-ton

MA-30-3
4 1/2-ton

MA-30-4
6-ton

COFFING HOISTS

DUFF-NORTON COMPANY

Four Gateway Center • Pittsburgh 22, Pa.

COFFING HOISTS

Ratchet Lever • Air
Hand Chain • Electric

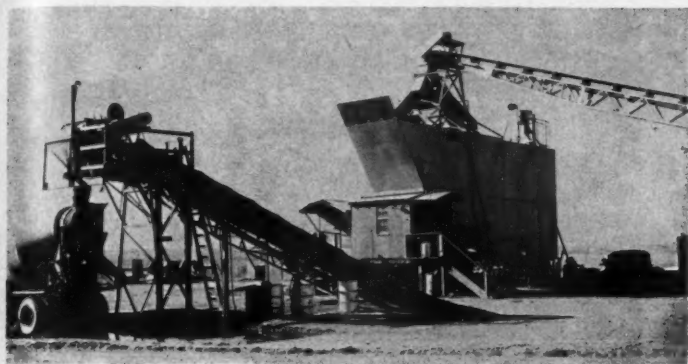


DUFF-NORTON JACKS

Ratchet • Screw
Hydraulic • Worm Gear

For more facts, use Request Card at page 18 and circle No. 310

CONTRACTORS AND ENGINEERS

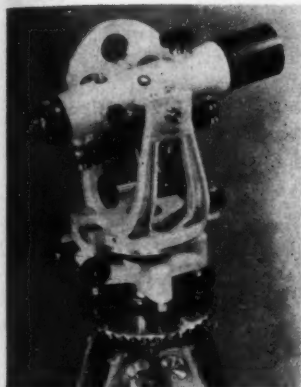


Portable concrete batching plants, complete with graphic recorders, provide the strict quality control required by U. S. Army Corps of Engineers specifications in construction of Titan missile bases in California. Driven to the job site and quickly assembled, these Noble-Mobile plants batch around the clock for slip forming of underground launching silos. Each plant reportedly will produce 33,000 cubic yards of concrete at an output of up to 100 cubic yards per hour. Each plant has overhead storage for 100 tons of aggregate in 3 compartments, separate overhead cement storage of 610 barrels, separate cement scale, admix dispenser, batch start interlocks, and recorder for cement, aggregates, and water. For further information write to the Noble Co., Dept. C&E, 1860 Seventh St., Oakland, Calif., or use the Request Card at page 18. Circle No. 23.

Transit telescope swings through complete circle

A new transit is announced by the Engineering Instruments Division of W. & L. E. Gurley.

Known as the contractor's transit Model 287, the instrument features a telescope 8½ inches long. The tele-



scope transits, swinging through a complete vertical circle, and it is possible to read horizontal and vertical angles to 5 minutes by vernier.

This transit is also useful as a level, states the manufacturer.

Both the horizontal and vertical circles are 4 inches in diameter, divided to 1 degree, numbered every 10 degrees in quadrants, both directions.

For further information write to W. & L. E. Gurley, Engineering Instruments Division, Dept. C&E, 514 Fulton St., Troy, N. Y., or use the card at page 18. Circle No. 101.

Conveyor belt offered for steeper inclines

A new conveyor belt with molded ridges that enable it to carry wet or dry materials up steeper inclines than its predecessors could handle is available from the B. F. Goodrich Industrial Products Co., a division of The B. F. Goodrich Co.

Designed to handle sand or gravel, the molded ridges reduce fall-back as the various materials are carried up inclines, states the manufacturer.

For further information write to the B. F. Goodrich Industrial Products Co., a division of The B. F. Goodrich Co., Dept. C&E, Akron, Ohio, or use the Request Card at page 18. Circle No. 66.

For more facts, use Request Card at page 18 and circle No. 311



TRENCH ON TAP

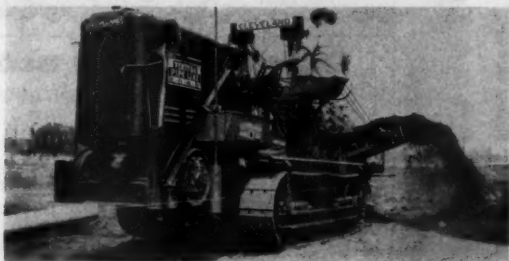
There's a reservoir of power-and-speed combinations for digging trench, here in the Cleveland J-30, that puts trench "on tap" right at the operator's fingertips—trench as you want it *whenever* you want it. It lets you plan your work closer... run tighter schedules... pace all your jobs for lower cost and greater profits... cover all your trench requirements from 11 to 24 inches wide down to 5½ feet deep.

You are sure of trench *on time, everytime*, regardless of soil, terrain, weather and other conditions, with a Cleveland J Trencher on the job. The operator has complete visibility from his seat with 100% control of every operation of the machine. With 12 separate crawler speeds for *each* of 4 wheel speeds, he has over 33 non-slipping digging-speed combinations from which to select the correct combination of power and speed for digging in every condition.

The V conveyor of the Cleveland J models, with its independent hydraulic drive and hydraulic lateral shift, discharges spoil in either direction at whatever speed is

best for the job—places it accurately wherever required for most efficient backfill at lowest cost. And *all* the Cleveland J's (J-20, J-30, JS-30, J-40) have a 1,000-hour-lubricated track that is easy-rolling, friction-free, completely maneuverable, tremendously long-lived and trouble-free—the world's finest trencher crawler.

Want "trench on tap"? Check the Cleveland J's with your distributor.



CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

Ease of control is a special feature on the SA-40. Dual control columns, one on each side of the operator's platform, provide fingertip steering for the operator.

Add crawler-mounted unit to asphalt-finisher line

Barber-Greene announces the Model SA-40 crawler-mounted asphalt finisher.

Designed to lay any sort of asphalt surface, in widths from 8 to 14 feet, the SA-40 is capable of laying speeds in the 100-fpm range, and is said to possess unusually high travel speed.

Among the many other features of this new machine are: hydraulically raised hopper sides, providing a self-cleaning receiving hopper; oscillating

pivoted truck contact roller, permitting the paver to push a misaligned truck without affecting the operator's directional control of the finisher; and automatically controlled twin feeders with manual override controls.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 102.



Compact base station for 2-way radio

Motorola has expanded its base-station line for 2-way radios with a new desktop model.

Called the Console station, the new compact unit is designed for easy installation on a desk. It is 15 inches long, 18 inches wide, and less than 9 inches high. Weight is under 40 pounds.

The Console station provides 25 watts power output when used with

systems operating on high-band (144 to 174 mc) frequencies, and provides 30 watts when used on low-band (25 to 54 mc) frequencies.

For further information write to Motorola, Inc., Communications and Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 60.

Pressure tank carries, discharges cement

A new steel dual-pressure tank-trailer with 62,000-pound shell full payload, designed to transport and discharge a wide range of materials including cement, has been announced by the Fruehauf Trailer Co.

This single-compartment steel tank has four bottom hoppers. Unloading of the tank can be accomplished with either a tractor-mounted blower with power takeoff or with blower pow-

ered by a gasoline-mounted engine on the trailer.

The tank is built in standard lengths from 32 to 35 feet, or by special design.

For further information write to the Fruehauf Trailer Co., Public Relations Dept., Dept. C&E, 10928 Harper Ave., Detroit 32, Mich., or use the Request Card that is bound in at page 18. Circle No. 65.

CONSTRUCTION BLOCKS
TAILORED TO YOUR SPECIFICATIONS

ILLUSTRATED: One of many designs precision built to fit a particular requirement—

McKissick's competent engineering staff and complete manufacturing facilities assure rapid production and delivery of CUSTOM BLOCKS . . . Any type, any size.

McKissick
McKISSICK PRODUCTS COMPANY • DRAWER 768 • TULSA, OKLAHOMA

For more facts, use Request Card at page 18 and circle No. 312

**A
COMPLETE
LINE . .
TO FIT EVERY
NEED... BETTER!**

MODEL GXTT



Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL GPX



Tandem axle. Capacities 16 through 40 tons. Drop deck or flat deck.

MODEL GTRY



Triple-axle, with or without removable gooseneck. Capacity 20 through 100 tons.

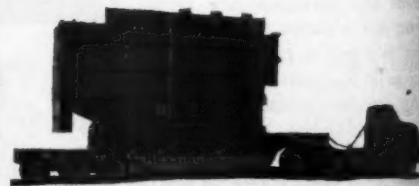
MODEL TXT



Tandem axle tilt-trailer (tow type), capacities 13 through 20 tons.

**TRANSPORTATION
ENGINEERING
A
SPECIALTY**

*Gives You That
Extra PAYLOAD!*



TRIPLE-AXLE MODEL GTX

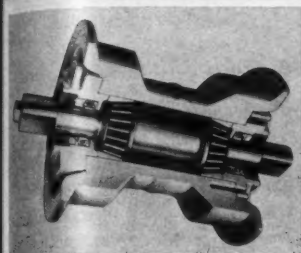
Positive equalization and distribution of weight on each axle is assured through this exclusive design. Six dual wheels with capacity of 30 through 60 tons. Flat or drop deck. Axles are tubular in type with heavy-duty, heat-treated alloy steel spindles ground to size to fit heavy-duty tapered bearings. All axles are of standard production and have camber for longer tire life.

TRANSPORT TRAILERS is the profit choice of contractors and movers the world over and is the complete solution to your transportation problem.

TRANSPORT TT TRAILERS
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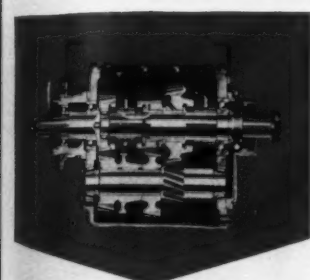
For more facts, use Request Card at page 18 and circle No. 313

CONTRACTORS AND ENGINEERS



Wheels for crawlers are lifetime-lubricated

Lifetime-lubricated wheels, previously announced as standard equipment on Oliver OC-9 and OC-96 crawlers, are now furnished as standard equipment on the larger OC-12



Specify FULLER MODEL 3-SPEED AUXILIARY

For medium-heavy duty trucks and tractors specify the FULLER '65 SERIES 3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

65 SERIES (Medium-heavy-duty) RATIOS			
SPLITTER RATIOS		DEEP REDUCTION	
MODEL	High	Inter-mediate	Low
3-A-65	.754	1.00	2.221
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3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

Specify the MODEL FULLER TRANSMISSION DIVISION EATON MANUFACTURING COMPANY KALAMAZOO, MICHIGAN For more facts, circle No. 314

dozer and on the OC-126 loader. These wheels are overhung for greatest clearance between track frame and track for longer wear, according to the company. For further information write to The Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use the card at page 18. Circle No. 103.

Offer portable generator rated at 3,000 watts

The Pesco Products Division of the Borg-Warner Corp., announces a heavy-duty portable electric generator that produces 3,000 watts of ac power.

Designated Zeus Model GW-300, the unit features a permanent magnet alternator that eliminates all brushes, slip rings, or commutator. The permanent magnet connects directly to the engine shaft with no coupling.

Lightweight and portable, the Zeus Model GW-300 is rated at 115 to 230 volts, 60-cycle single-phase. Powered by a rope-started 1-cylinder 4-cycle air-cooled gasoline engine, the unit will operate for approximately 5 hours of full load running on a fuel-tank capacity of 2 3/4 gallons. It is equipped with a positive-action fuel pump to permit connection to an auxiliary fuel tank of larger capacity.

A special conversion kit permits simple adaptation for butane or propane-gas operation.

For further information write to the Borg-Warner Corp., Pesco Products Division, Dept. C&E, 24700 N. Miles Road, Bedford, Ohio, or use the Request Card at page 18. Circle No. 30.

New spreader available for snow, ice control

A pull-type spreader for ice and snow control is offered in a 1-ton size by the Baughman Mfg. Co., Inc.

The new, compact model, named the Safety Spreader, is said to have exceptional maneuverability that allows it to be used in confined areas where large spreaders would be impractical.

Salt, sand, cinders, and other types of commonly used ice and snow-removal materials can be applied with the Safety Spreader. A belt conveyor powered by a wheel-mounted sprocket is used to empty the body. This arrangement synchronizes belt speed with ground speed to provide a correct discharge rate at all times.

The standard Safety Spreader can be pulled by a tractor or any unit equipped with a power-takeoff attachment for operating the distributor spinner. Another version is available with an auxiliary engine that allows the spreader to be pulled by any type of vehicle.

The spreading pattern can be accurately controlled at any width from 3 to 32 feet, it is said.

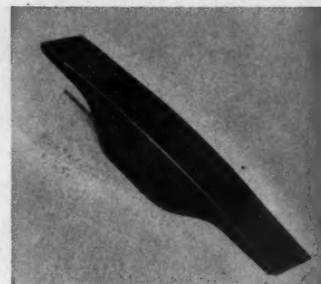
For further information write to the Baughman Mfg. Co., Inc., Dept. C&E, 192 Arch St., Jerseyville, Ill., or use the Request Card at page 18. Circle No. 79.

Special design doubles scarifier point life

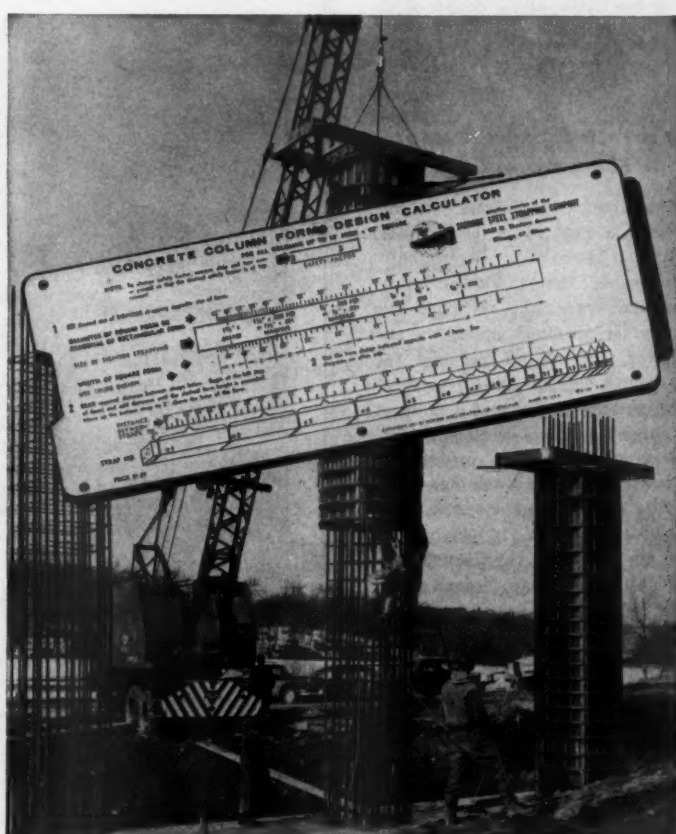
A 2-point, reversible scarifier tip for road graders has been announced by Allied Steel & Tractor Products, Inc.

Known as Twin-Tip, this unit features a point on each end so that the tip can be reversed when the first point becomes worn.

Made of special alloy, shock-resistant steel, the tips are drop-forged and differentially heat-treated to provide maximum dependability. According to the manufacturer, wedge-action channel design locks the part securely in position and insures a firm grip on the shank regardless of



operating conditions. For further information write to Allied Steel & Tractor Products, Inc., Dept. C&E, 7835 Broadway, Cleveland 5, Ohio, or use the Request Card at page 18. Circle No. 104.



Minimize concrete column form costs ...Signode calculator shows how

The cost of designing, building and stripping concrete forms is a large factor in concrete construction costs. Now, you can reduce these costs sharply by using Signode's standardized column form designs. You save in these ways: by using proved simplified form designs; by faster assembly of forms; by faster stripping and less finishing time; by prefabrication in the horizontal; by needing only one man in most cases—Signode tools are designed for a single operator to work efficiently.

Signode's Calculator speeds column form design. It condenses strap size and spacing data for forms up to 65" diagonal or diameter and offers an option of safety factors up to 5. Six tested truss designs are shown.

A limited supply restricts these handy calculators to architects, contractors and engineers. The nominal charge of \$1.00 assures prompt shipment of your calculator. Send your dollar now.



SIGNODE STEEL STRAPPING CO.
2694 N. Western Avenue, Chicago 47, Illinois
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For more information, write company



With a dumping clearance of 8 feet 7 inches at maximum lift and a dumping reach of 25¾ inches, the 922 easily loads into trucks without danger of hitting the truck body. Standard bucket for the 922 Traxcavator has a 1¼-cubic-yard capacity.

Announce new excavator with 1¼-yard bucket

The Caterpillar Tractor Co. announces a new wheel Traxcavator, the 80-hp Model 922.

In over-all design and configuration, the 922 closely resembles the two larger machines previously announced, the 105-hp 944 and the 140-hp 966. The 922 has a 1¼-cubic-yard-capacity bucket and is powered by either a gasoline or diesel engine.

With a maximum lift capability of 12 feet 2 inches and a dumping reach of 25¾ inches, the Model 922 has a breakout force of 13,700 pounds. Turning radius at the outside rear tire is 20 feet 4 inches. Ground clearance is 14¾ inches.

The machine's power train includes a 2-speed power-shift transmission, a torque converter, auxiliary transmission, and a planetary final drive. Four-wheel drive is used for working conditions, and a 2-wheel drive is available for highway travel. A high-low speed range gives the unit four speeds forward and four in reverse. Top speeds are 19 mph forward and 24 mph in reverse.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card that is bound in at page 18. Circle No. 49.

Paddle-type washer removes soluble clay

The Eagle Iron Works has introduced the Sol-Clay washer. Designed for heavier-duty service than the company's coarse-material washer-dewaterer, this paddle-type unit is for removing water-soluble material.

The Sol-Clay unit will handle coarse aggregate passing through a 2½-inch screen. Capacity is 100 to 125 tph, depending upon the amount of contamination in the material.

For further information write to the Eagle Iron Works, Dept. C&E, 159 Holcomb Ave., Des Moines, Iowa, or use the Request Card at page 18. Circle No. 17.

Rubber blasting mat for congested areas

A new heavy-duty, rubber blasting mat for safe shooting in congested areas is available from O. B. Wasbotten & Sons.

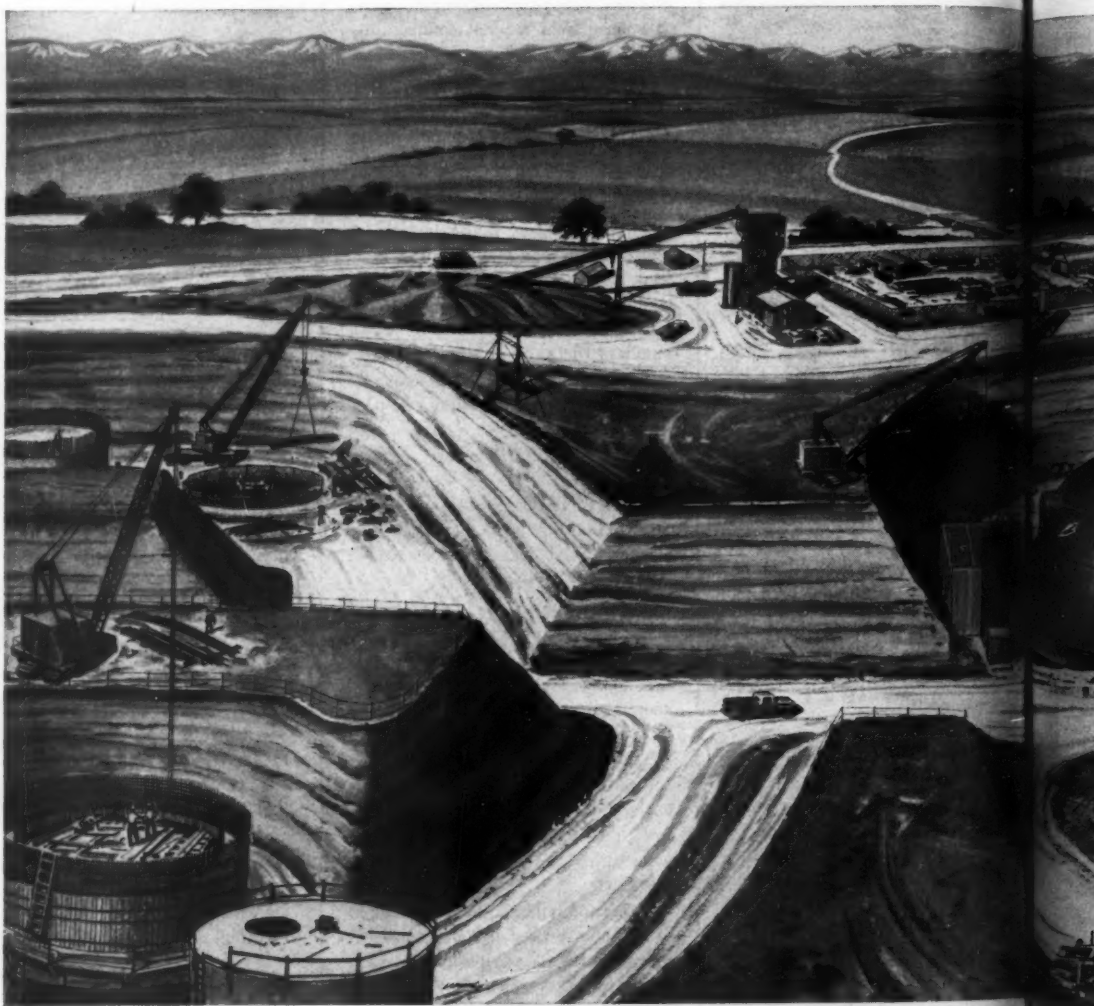
It is made of sliced-up automobile tire casings woven together with steel cables to form a thick, strong, resilient covering. The mat is said to resist damage indefinitely under normal blasting conditions. Should a heavier-than-normal blast occur, however, damage is easily repaired.

According to the company, the new mat gives more protection against fly rock than ordinary steel mats. An-

other advantage of the rubber mat is that it will not short-out electric blasting caps, consequently, contractors working in built-up areas can use millisecond-delay electric blasting caps to get greater production at minimum energy levels.

These blasting mats are available in three standard sizes—6 × 10, 10 × 12, and 10 × 15.

For further information write to O. B. Wasbotten & Sons, Dept. C&E, 1609 Arrowhead Road, Duluth 11, Minn., or use the Request Card at page 18. Circle No. 62.



Titan underground missile base uses CF&I Steel Products

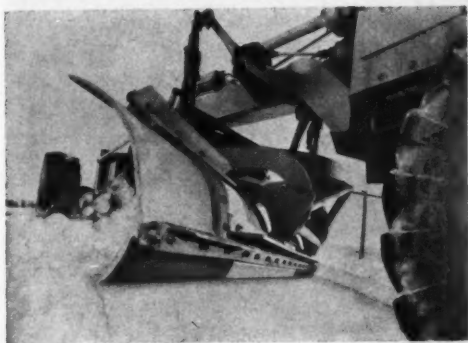
Vital to America's defense will be this completely-underground ICBM installation on the Lowry Bombing Range near Denver. It will comprise six complexes—one of which is pictured above—and each will be ready to fire three 98-foot long Titans. In building the complexes, which will occupy 875 square miles, the Corps of Engineers has used a variety of CF&I Steel Products—products known for their dependability.

CF&I Grader Blades and Cutting Edges gouged out huge excavations in which the installation will be buried. Thousands of tons of CF&I Reinforcing Bars fortify most of the concrete structures, including the launching silos and support

installations. Cal-Tie Wire, in handy dispensers, was used to tie the rebars together.

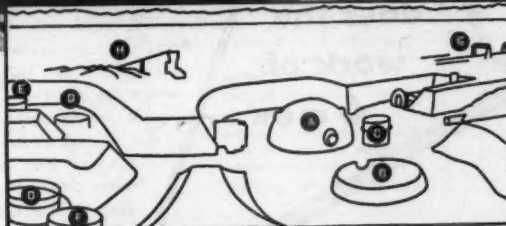
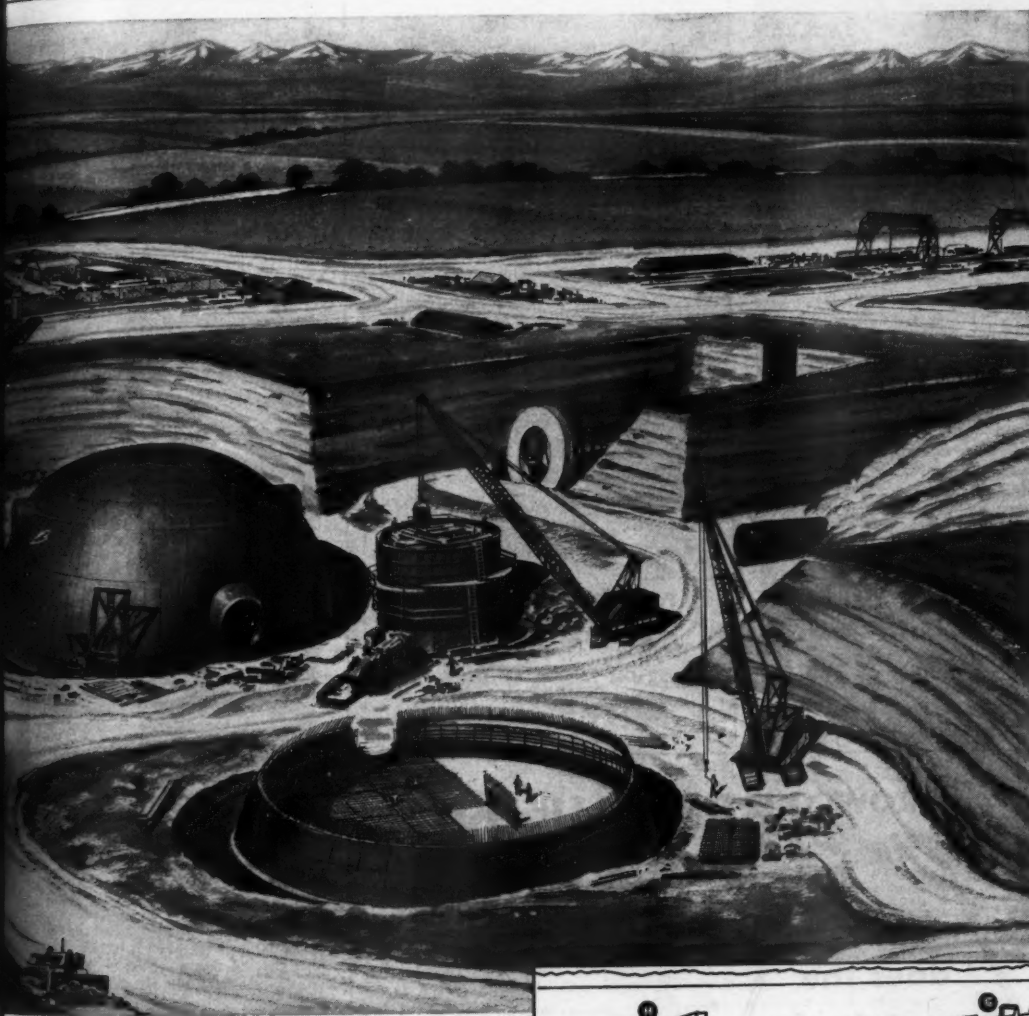
Throughout the project, CF&I-Wickwire Wire Ropes were chosen for cranes, steam shovels and hoists, because the ropes have extra-high breaking strength and provide long service life. Realock Fence and CF&I Field Fence guard the excavations and police "off limits" areas.

CF&I-Clinton Welded Wire Fabric was specified to give additional steel backbone to many concrete structures, making them as "shock proof" as possible. The bases of the powerhouse and control center are further reinforced with CF&I Hard Drawn Prestressed Concrete Wire for Redrawing. CF&I



For snow and ice removal by motor graders and underbody truck graders, the Pascal X-Tra Edge blade, which is wider and thicker than conventional blades, is also said to be longer wearing. It permits blade changes at times and places convenient to the users, and can be used as a conventional 2-piece or as a 3-piece arrangement. In the 3-piece arrangement the blade is center-mounted where wear is normally greatest. The hardened steel blade increases in thickness from 1/2 inch at top to 3/4 inch at the wearable portion and is 8 inches wide. When installed, the special center blade is flanked by two 8-inch end blades of 1/2-inch thickness. In situations requiring exceptional down pressure per foot

of blade, the two end blades may be removed and work accomplished with the center blade only, thus permitting the operator to keep his blade underneath ice or packed snow. Pascal X-Tra Edge blades are self-sharpening. For further information write to Paper, Calmenson & Co., Dept. C&E, County Road B and Walnut St., St. Paul, Minn., or use the Request Card at page 18. Circle No. 13.



- | | |
|----------------------|-----------------------|
| Ⓐ Power House | Ⓙ Propellant Terminal |
| Ⓑ Control Center | Ⓚ Rebar Forming Yard |
| Ⓒ Portal Silo | Ⓛ Sand and Gravel |
| Ⓓ Launching Silos | Ⓜ Quarry, Concrete |
| Ⓔ Equipment Terminal | Ⓨ Batching Plant |

Prestressed Concrete Strand and Wire were also used in the concrete bridges on the entry roads.

CF&I Industrial Screens were selected for many sand and gravel separators. And CF&I Galvanized Steel Strand is prominent as guy wire on utility poles.

Whenever technical information is required on any product, CF&I engineers are ready to assist you. This service is available to all our customers. For full details about any CF&I product, call our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION
DENVER • OAKLAND • NEW YORK

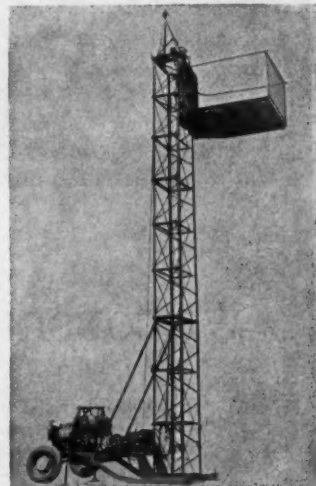


For more facts, use Request Card at page 18 and circle No. 316

Portable hoist features 3,000-pound capacity

An exceptionally powerful and maneuverable construction hoist called the Jumbo is announced by the Tubular Structures Corp. of America. The portable hoist offers completely automatic features and hydraulic power, with hydraulic erection "by one man, in one minute."

Capacity for this machine is 3,000 pounds. The platform measures 6 feet



Powered by a Wisconsin 30-hp engine, the Jumbo portable construction hoist handles loads up to 3,000 pounds.

6 inches x 5 feet 6 inches. Power is supplied by a Wisconsin 30-hp air-cooled engine. Without having to be disassembled, the Jumbo can be towed at any legal speed by an ordinary vehicle.

The basic Jumbo unit is 30 feet high, allowing unloading at 25 1/2 feet. Extra 5 and 10-foot sections may be added to permit heights in excess of 170 feet. The platform automatically stops at any preset level.

Among the unit's other features are: a broken-cable safety device that locks platform to tower in case of cable failure; an automatic brake that actuates in case of power failure or pressure loss; and an automatic overload preventer and override limit safeties at bottom and top of tower.

For further information write to the Tubular Structures Corp. of America, Dept. C&E, 4560 Sperry St., Los Angeles 39, Calif., or use the card at page 18. Circle No. 52.

New additive increases diesel-engine efficiency

An additive for diesel fuel and oil, said to increase the operating efficiency of diesel engines, is offered by Lubrication Engineers, Inc.

Called L-X, the new supplement reportedly prevents the clogging of fuel injectors, helps to combat the formation of wear-inducing acids, and will prevent the sticking of piston rings.

For further information write to Lubrication Engineers, Inc., Dept. C&E, P. O. Box 7128, Fort Worth, Texas, or use the Request Card at page 18. Circle No. 68.

Announce new excavator with 1 1/4-yard bucket

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In over-all design and configuration, the 922 closely resembles the two larger machines previously announced, the 105-hp 944 and the 140-hp 966. The 922 has a 1 1/4-cubic-yard-capacity bucket and is powered by either a gasoline or diesel engine.

With a maximum lift capability of 12 feet 2 inches and a dumping reach of 25 1/4 inches, the Model 922 has a breakout force of 13,700 pounds. Turning radius at the outside rear tire is 20 feet 4 inches. Ground clearance is 14 3/8 inches.

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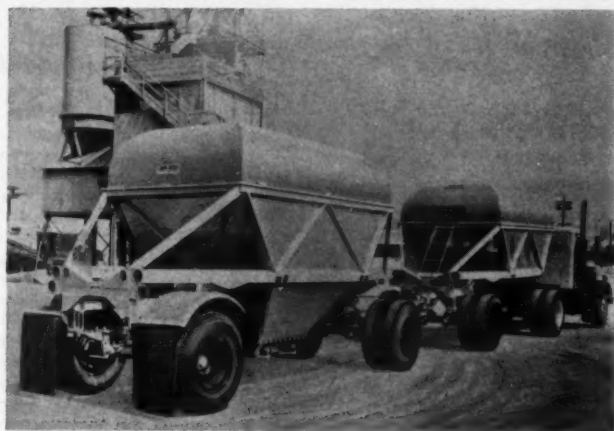
CONTRACTORS AND ENGINEERS

Product Parade—EQUIPMENT AND MATERIAL INFORMATION THAT CAN SAVE YOU MONEY

Truss and hopper on the Cook-Brogdax Model LWC-2 bottom-dump trailer are built as an integral unit for maximum strength and minimum over-all weight.



LPG is safe, clean, economical, and extends engine life. Grinder is made by Terrazzo Machine & Supply Co., Minneapolis, Minn., and is powered by an LPG-burning vertical-shaft Wisconsin.



Belly-dump trailer train of lightweight aluminum

Challenge-Cook Bros., Inc., announces the Cook-Brogdax Model LWC-2 lightweight aluminum bottom-dump trailer train for over-the-

cost less to use —
and they're safer indoors

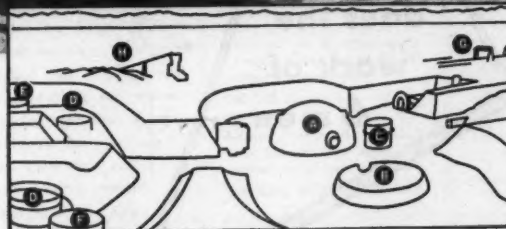
DEUTZ AIR-COOLED
DIESELS GIVE



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- | | |
|----------------------|---|
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| 4 Launching Silos | |
| 5 Equipment Terminal | |

THE COLORADO FUEL AND IRON CORPORATION
DENVER • OAKLAND • NEW YORK



For more facts, use Request Card at page 18 and circle No. 316

FEBRUARY, 1961



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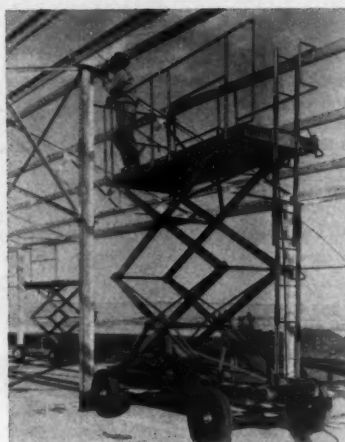
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Product Parade—YOUR HEADQUARTERS FOR INFORMATION ON NEW EQUIPMENT AND MATERIALS

Kettle applies asphalt directly into the joint

The Model KE-RA-20 rubberized asphalt kettle, designed to apply hot material directly into the joint, is announced by the Aeroll Products Co., Inc.

The material is indirectly heated by heat-transfer oil. A mechanical



A portable hydraulic work-load lift is shown being used on a hangar construction job. Manufactured by the Charles Machine Works, Inc., this Sky-Witch Model 10-1117 is being used to weld wind braces and bolt the purlins to the roof trusses. It has raised the purlins and braces to proper job height and is providing a stable work platform from which to complete the installation. The model pictured is powering the hydraulic system with a gasoline engine, and is capable of raising 1,000 pounds to a height of 17 feet. Other sizes and models are available. For further information write to the Charles Machine Works, Inc., Dept. C&E, Perry, Okla., or use the Request Card at page 18. Circle No. 242.

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LPG is safe, clean, economical, and extends engine life. Grinder is made by Terrazzo Machine & Supply Co., Minneapolis, Minn., and is powered by an LPG-burning vertical-shaft Wisconsin.

cost less to use — and they're safer indoors WISCONSIN LPG ENGINES

If you operate indoors, you gain both safety and savings when you select equipment powered by LPG-burning air-cooled Wisconsin Engines. You can save up to 15% on gas consumption alone. And because of the sealed fuel system, none is wasted — and none is lost through evaporation, spilling, or pilferage. Also, LPG combustion greatly reduces the percentage of dangerous carbon monoxide gas.

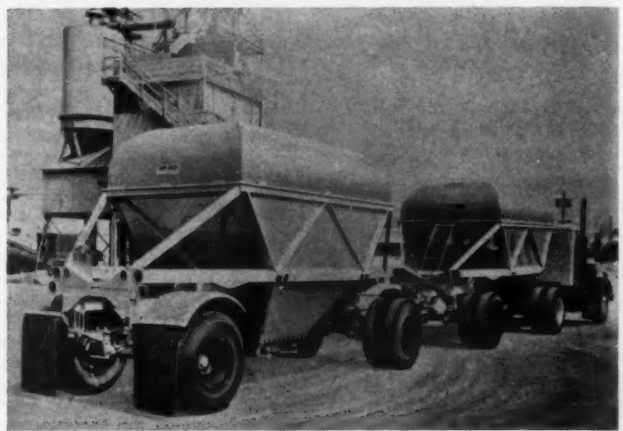
LPG burns clean. This leaves your engine free of gum, lead, and carbon deposits on pistons, rings, valves, guides, and spark plugs. Your engine lasts longer — and requires much less upkeep. When buying power equipment for indoor use, specify it with LPG-burning Wisconsin Engines, 3 to 56 hp. Or you can convert your existing Wisconsin with easy-to-install LPG kits. Get Bulletin S-225. Write Dept. C-21.



WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of
Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 317

C-274



Belly-dump trailer train of lightweight aluminum

Challenge-Cook Bros., Inc., announces the Cook-Brogdex Model LWC-2 lightweight aluminum bottom-dump trailer train for over-the-road hauling.

Built expressly for hauling bulk cement, the unit has a full 28-ton payload capacity. Double-acting butterfly gates permit its use for hauling aggregate and make it an ideal rig for service to ready-mix concrete plants, according to the manufacturer.

A low silhouette allows more overhead clearance for faster loading. The low center of gravity is said to greatly reduce the danger of tip-over and to provide better tracking. Sides and corners are sloped to allow complete, free gravity-flow of material through the 27 x 34-inch bottom-dump gates. A wide selection of suspensions and brake systems is available.

For further information write to Challenge-Cook Bros., Inc., Dept. C&E, Dept. 13, 3334 San Fernando Road, Los Angeles 65, Calif., or use the card at page 18. Circle No. 28.

DEUTZ AIR-COOLED DIESELS GIVE YOU MORE COMPACTION — LESS DOWNTIME



BROS Vibra-Pactor VP 80 with Deutz Diesel A 2 L 514



Essick's Vibratory Roller VR-72-T with Deutz Diesel F 3 L 712

Fewer passes—You can level a site (any soil) to 100% density faster, at less cost with a DEUTZ-powered vibratory roller. 8 million yards of sand were compacted at Griffiss Air Force base with DEUTZ-powered Vibro-Plus rollers... at great savings.

Less downtime—Deutz Air-cooled Diesels because of their rugged construction aircooling and compact design, eliminate the problems usually associated with water-cooling systems.

You can get these benefits—if you don't have a DEUTZ equipped roller, a DEUTZ power-pack is available.

DEUTZ Diesels do other tough jobs—on graders, earthmovers, shovels, mixers, pumps, compressors and generator sets. Air-cooled DEUTZ diesels stand up under heat up to 140° Fahrenheit, arctic cold, tropical humidity. AIR-COOLED DEUTZ DIESELS range from 5 to 250 HP in 1, 2, 3, 4, 6, 8, and 12 cylinder models.

DEUTZ
Diesel Energy Corporation
82 Beaver St.,
New York 5, N.Y.

Please send facts on further advantages of Air-cooled DEUTZ Diesels for:

☐ Industrial uses ☐ Construction
☐ I am ☐ Operator ☐ Dealer C&E

Name _____
 Address _____
 City _____ Zone _____ State _____

For more facts, use coupon or circle No. 319
CONTRACTORS AND ENGINEERS

NEW MODEL 660

THOUSANDS IN USE. Write for free literature and name of your nearest distributor.

ROWCO MFG. CO., INC.
DEPT. CE-2, 48 EMERALD ST., KEENE, N.H.

ROWCO BRUSHKING SPEEDS BRUSH CLEARANCE

660 does the work of 6 men

The new Rowco Brushking Model 660 — now 50% more powerful with 3 H.P. throughout — slashes through brush and trees up to 9" dia. Takes the work and waste out of forest, woodland and park clearance jobs. Cuts clean at ground level. Reaches into ditches. Limbs and trims overhead. With trimmer-cutter attachment, makes short work of heavy grass and weeds. Guaranteed shatterproof blade — complete operator safety. Pays for itself in a hurry!

For more facts, use Request Card at page 18 and circle No. 318

Kettle applies asphalt directly into the joint

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agitator is provided to mix materials and thus aid in speeding up melting time.

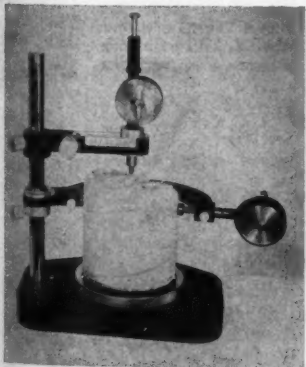
The unit will work right up to curbs, bridge rails, and other obstructions, according to the manufacturer. A swivel caster in the rear aids maneuverability.

For further information write to the Aerol Products Co., Inc., Dept. C&E, 9 Wesley St., South Hackensack, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 33.

Concrete-core length, diameter indicator

A versatile new measuring indicator for determining, quickly and accurately, the length and diameter of drilled concrete cores to be used for testing is available from Soltest, Inc., Chicago, Ill.

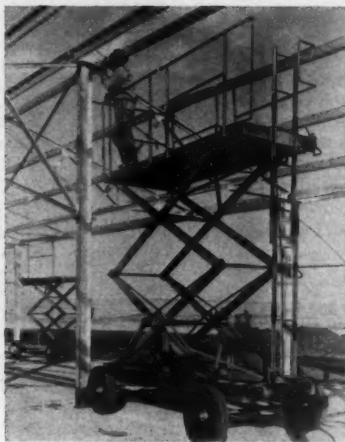
The indicator has an indexing rotary table on which 4 or 6-inch-diam-



eter concrete cores are placed. This table locks into eight positions for measuring the core length up to 12 inches.

The portion of the indicator for measurement of diameter is detachable, thus making two independent measuring units for diameter and length.

For further information write to Soltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card that is bound in at page 18. Circle No. 105.



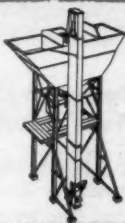
A portable hydraulic work-load lift is shown being used on a hangar construction job. Manufactured by the Charles Machine Works, Inc., this Sky-Witch Model 10-1117 is being used to weld wind braces and bolt the purlins to the roof trusses. It has raised the purlins and braces to proper job height and is providing a stable work platform from which to complete the installation. The model pictured is powering the hydraulic system with a gasoline engine, and is capable of raising 1,000 pounds to a height of 17 feet. Other sizes and models are available. For further information write to the Charles Machine Works, Inc., Dept. C&E, Perry, Okla., or use the Request Card at page 18. Circle No. 242.



Charge, Batch, Open the Gates on Profit with a Johnson Plant

Here are three transit-mix plants that cost little and offer a lot: easy erection, simple precision mix control; and years of service with a minimum of attention.

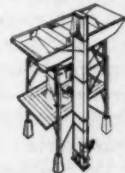
JUMBO



102-cu-yd of aggregate storage in 3-compartment bin.
155-185-bbl overhead bulk cement tank.
6-cu-yd Hi-Speed Concentric Batcher with independent cement scale and hopper.
315-380-bbl-per-hr cement elevator.

The Jumbo is the largest of the low cost transit-mix plants. It offers controlled discharge of aggregate and cement through two separate levers. Cement is discharged within the aggregates to increase pre-mixing and minimize dusting. Packaged design makes erection and servicing easy. Pneumatic cement charging system available for handling bulk cement.

ECONO PLANT



45-cu-yd in 3 aggregate compartments. 58-70-bbl cement compartment.
200-240-bbl-per-hr cement elevator.
3-cu-yd concentric batcher with independent scale for cement weighing.
Charging height 30½ feet.

Econoplant easily meets toughest specifications at high speed. Low charging height makes it ideal for clamshell charging. Cement is discharged within aggregates. Cement compartment comes complete with low-pressure aeration system.

ROUST ABOUT



38-cu-yd aggregate in 3 compartments. 50-bbl cement compartment.
200-240-bbl-per-hr cement elevator.
3-cu-yd concentric batcher with independent scale for weighing cement.

Roustabout is designed for quick assembly and convenient trucking between jobs. Maximum width of largest section is 9 feet. Maximum erection lift is only 4½ tons. Entire plant can be up and working in less than a day.



Johnson makes a variety of clamshell and concrete buckets, including special Lo-Slump buckets operated manually or by air. See your Johnson distributor for details.

C. S. JOHNSON CO.
Champaign, Ill. • Stockton, Calif.

KOEHRING
A Division of
Company

For more facts, use Request Card at page 18 and circle No. 320

Cutting in a highway bed was the work assigned to this Koehring Scooper owned by the T. L. James Co., Inc., of New Orleans. The company states that, even though the cut was extremely shallow, the Scooper loaded 115 five-yard trucks in one 8-hour day. In addition, because the Scooper loads while standing still, one lane remained open for traffic at all times. For further information write to the Koehring Division, Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 41.



ONE COMPANY DOES A LOT MORE



ANOTHER PROBLEM SOLVED BY AIRPLACO

An Airplaco Concrete Placer being used to pour concrete in construction of tanks for new water treatment plant. Concrete is "air extruded", through tubing from transit-mix trucks, up through center of tank. Tubing revolves full 360° to all points. Deep cut in foreground makes truck-crane-and-bucket pour impossible. Man in orange hat is the Airplaco Man-on-the-Job.



AIRPLACO Men on the Job

When Airplaco equipment goes out on a job, it is backed up by Airplaco factory trained service men. Airplaco's Men-on-the-Job are there to train and certify the operating crew so that you get peak performance at all times. This is the "extra effort" that means extra profit for you.

AIRPLACO "Advanced Design" Equipment

Years of research, testing and specialization in the field of pneumatic placement, make Airplaco equipment the most flexible, most versatile equipment you can operate. Every piece of Airplaco equipment, from the smallest concrete gun through a complete line of placement equipment, to the largest Concrete Placer, is job-rated to deliver quality concrete with speed, ease and economy.

Put AIRPLACO on Your Team

All of the experience and knowledge gained over the years, and on many, many jobs, is available to you without cost or obligation. Our Field Engineers are ready to tackle your toughest concrete problem and show you how AIRPLACO can save you time and money . . . and best of all . . . make a profit. Write, wire or phone.

PLUS FREE BROCHURE



Add three new models to transit-mixer line

The addition of three new concrete truck-mixer models to its existing lines of Rex equipment is announced by the Chain Belt Co.

The Model 77, designed for ease of operation and maintenance, features simplified 2-speed, in-line transmission with 2-lever control.

The second model, the Wate-Saver, reduces mixer weight up to 1,700 pounds to permit greater legal payloads. Practical use of steel and aluminum allows reduced weight without sacrificing equipment life, states the manufacturer.

The third machine, the Rex 155, is built for steady, high-production output under severe operating conditions. It offers a wide choice of Rex-built transmissions and other optional equipment designed to fit the varying needs of operators.

For further information write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 111.

Spray-on thread loosener frees seized parts

A new lubricant for freeing tight, rusted, or seized parts is available from The Whitmore Mfg. Co.

Packaged in a 16-ounce push-button spray container for fast, easy application, this lubricant reportedly penetrates rust and corrosion quickly to free tight or rusted pins, linkage, hinges, nuts, bolts, valves, and other seized parts.

The new formulation is said to be nongumming and to eliminate rust and corrosion, increase parts life, and minimize wear. It is recommended for all climatic conditions, including salt atmospheres.

A free trial can of the thread loosener will be sent to any interested company.

For further information write to The Whitmore Mfg. Co., Dept. C&E, Drawer 160 Station C, Cleveland 4, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 74.

Measure any distance at walking speed



records 100,000 ft. automatically!

It's So Easy to measure with a Rolatape . . . and you save time on every estimating job . . . no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealer.



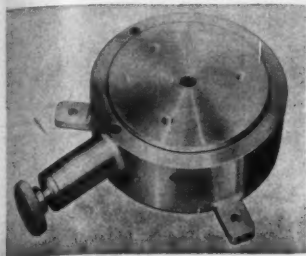
Rolatape Measuring Wheels

For more facts, circle No. 322
CONTRACTORS AND ENGINEERS

Hydraulic load cell has 15-ton capacity

A hydraulic load cell designed for use in load-measurement testing machines, loading frames, and in special weighing and test work is available from Solitest, Inc.

The standard cell, which has a 30,000-pound load capacity, is 7½



inches in diameter and approximately 3 inches high. It is fitted for mounting in permanent or removable installations. The hardened top surface of the cell is smooth so that a test platen or fixture may be easily mounted.

A flexible line connects the load cell to the hydraulic indicator gage, which is calibrated to read the applied load to within 1 per cent of indicated load. The 8½-inch-diameter gage and calibration are included with the cell set.

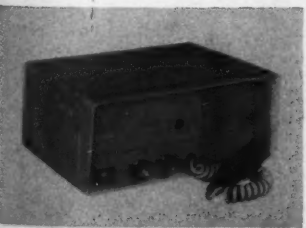
For further information write to Solitest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 16.

Radio for base-station, mobile installations

A new 2-way radio, the Model G-150 Business Communicator, is available from the Gonset Division of the Young Spring & Wire Corp.

This equipment operates on frequencies within the 150 to 174-megacycle range.

The same basic G-150 unit is used for both base-station and mobile in-



stallations. The cabinet measures 5 inches high, 12½ inches wide, and 8½ inches deep. Models are available for 6, 12, or 24-volt dc for mobile service, or 117-volt ac for fixed-station service. Operating aids include adjustable "squell" for muted standby and automatic noise limiter.

For further information write to the Gonset Division, Young Spring & Wire Corp., Dept. C&E, 801 S. Main St., Burbank, Calif., or use the Request Card that is bound in at page 18. Circle No. 108.

For more facts, use Request Card at page 18 and circle No. 323

Atlas Copco's Model ER8 heavy-duty 400-hp air compressor delivers 2,280 cfm at pressures ranging up to 125 psi. The machine is a 2-stage, double-acting water-cooled unit.

Compact air compressor rated at 2,280 cfm

A 400-hp stationary air compressor delivering 2,280 cfm is announced by Atlas Copco.

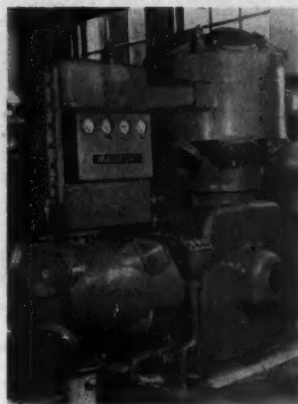
According to the manufacturer, installation time is minimized since the compressor is delivered as a complete unit that can be bolted to a simple steel frame preset in the concrete foundation. Designated Model ER8, this compressor is a 2-stage, double-acting, water-cooled unit with cylinders placed in an L arrangement. It has an exceptionally high capacity-to-weight ratio, obtained primarily by

the short-stroke design.

Equipped with a water-cooled intercooler, fitted with an automatic condensate drain valve, this machine is rated for working pressures up to 125 psi. Output is 2,280 cfm at 100 psi when running at 514 rpm.

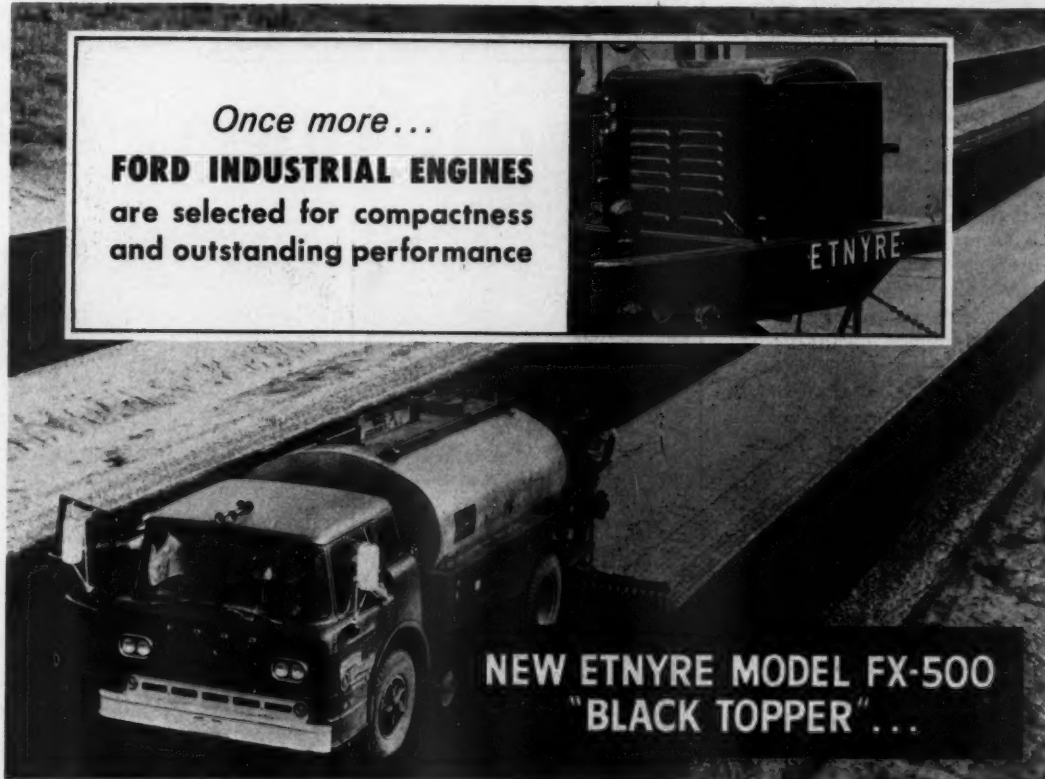
The machine weighs 11,700 pounds, and is 94½ inches wide, 63½ inches deep, and 93½ inches tall.

For further information write to Atlas Copco, Dept. C&E, 545 Fifth Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 81.



Once more...

FORD INDUSTRIAL ENGINES
are selected for compactness
and outstanding performance



NEW ETNYRE MODEL FX-500
"BLACK TOPPER"...

**designed for maximum payloads...
and dependable, economical operation!**

It's easy to see why Etnyre chose a Ford Industrial Engine for their FX-500 "Black Topper"... Ford engines deliver the kind of peak performance that construction work requires. Dependability and economy of operation are just two of the many advantages enjoyed by OEM's using Ford Industrial Engines. They're compact engines, allowing greater freedom of equipment design, and delivering more horsepower per pound of engine weight than ever before possible!

Parts and service availability is immediate, with a nationwide network of Ford Dealers carrying a complete stock of more commonly purchased engine parts

Only Ford offers a full line of modern, overhead-valve design engines to meet every power requirement.

Ford engines range from 134 to 534 cubic inches, including modern diesels. Most of these engines are available as foot- or skid-mounted power units. Whatever your industrial power need, it'll pay you to specify Ford Industrial Engines.

More power to you...



Ford
INDUSTRIAL ENGINES
AND POWER UNITS

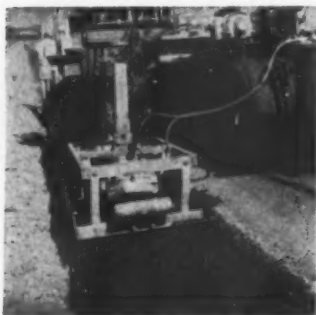
**YOUR JOB IS WELL-POWERED
WHEN IT'S FORD-POWERED!**

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to:

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.



The Jackson rig for bituminous highway widening is said to do an exceptionally good job of compacting in situations that are awkward or inaccessible to other equipment.

Rig aids in widening bituminous highways

For deep bituminous-type road widening, 6 to 12 inches in thickness, Jackson Vibrators, Inc., announces a new method of compacting the blacktop.

The complete rig for performing this operation consists of a Jackson multiple compactor with a new side-towing device to which are attached three compactor units in tandem. This follows the spreader, which is also equipped with a Jackson side-towing device, towing two Jackson vibratory compactor units. In this manner, compaction of blacktop in 6-inch (loose) layers, 5-inch (compacted), exceeding 100 per cent of specified density, can be achieved in one pass of the equipment, states the company.

Water tanks mounted on the multiple-compactor tractor and the spreader supply water for a spraying device that prevents the blacktop from sticking to the compactor bases. Electric current for the compactors attached to the spreader is supplied by a Jackson portable power plant mounted on the spreader. The vibratory motors used in this type of operation are taken from the standard 6-unit workhead of the multiple compactor.

Compactor bases are available in any width up to 3 feet.

For further information write to Jackson Vibrators, Inc., Dept. C&E, S. Jackson Road, Ludington, Mich., or use the Request Card at page 18. Circle No. 59.

Seven-strand wire rope is tough and flexible

A new type of all-purpose wire rope, designated 7-flex, is offered by the MacWhyte Wire Rope Co.

This rope is made of 7 strands, instead of the conventional 6 or 8 strands, and has an independent wire-rope core.

Said to be exceptionally abrasion-resistant and flexible, the rope is available in sizes from ½ inch to 1½ inches.

For further information write to the MacWhyte Wire Rope Co., Dept. C&E, 2906 14th Ave., Kenosha, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 110.

A new type of car shaker designed to hang on the side of open-top, hopper-bottom railroad cars, without requiring any clamping devices, is available from Eastern Constructors, Inc. The shaker pounds on the top edge of the car side with heavy impacts, shaking and vibrating the entire car. It also strikes the lower area of the car side with powerful blows to dislodge tightly packed materials in the car pockets. The shaker is available in either a 10 or 15-hp size. For further information write to Eastern Constructors, Inc., Dept. C&E, Poland, Ohio, or use the Request Card at page 18. Circle No. 230.



EUCLID

all-wheel drive



Produ
Rotary
is rate

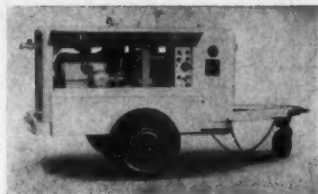
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Rotary air compressor is rated at 125 cfm

A new 125-cfm diesel-powered 2-wheel rotary air compressor is announced by the Davey Compressor Co.

Known as Model 125-RPD, it is powered by a Hercules DD-198 engine. Standard equipment includes the Davey-Perma-Vane Rotor blades, built-in double tool boxes, adjustable cooling shutters, and a centralized instrument panel with hour meter.

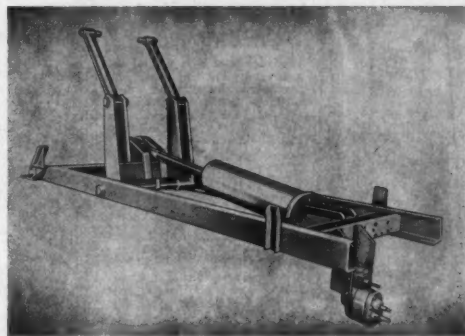
The unit is 122 inches long, 65 inches wide, and 63 inches high. Dry



weight is 2,790 pounds.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card that is bound in at page 18. Circle No. 10.

Fullest use of the "forward - lift" principle and improved linkage between the hoist piston rod and the lifting arms are major features of the new Perfection hoists.



New underbody hoists built for heavy duty

The Perfection Steel Body Co. announces a new line of heavy-duty, underbody hoists in both single and twin-cylinder models.

According to the manufacturer, the lift point of these hoists has been moved far forward and beyond the lift point of the ordinary underbody hoist. With the lift point placed much closer to load center of the truck body, power requirements to raise and dump the heaviest loads are greatly reduced. In addition, less oil pressure is required for hoist operation, which means extended life of the entire hydraulic system.

An improved linkage between the hoist piston rod and the lifting arms is said to raise and lower the body with exceptional smoothness.

Single-cylinder hoists are furnished in either 7 or 8-inch diameters with 25-inch stroke, and in capacities of 26,000 and 34,000 pounds. Twin-cylinder hoists are available in either 6, 7, or 8-inch cylinder diameters, in capacities of 32,000, 42,000, and 40,000 to 48,000 pounds.

For further information write to the Perfection Steel Body Co., Dept. C&E, S. East St., Gallon, Ohio, or use the card at page 18. Circle No. 14.

Automatic grade control for bituminous paving

Specially designed to maintain grade level automatically from an accurate base, wire, form, or other device, a new automatic grade control for bituminous paving has been introduced by the Blaw-Knox Co.

Available for all bituminous pavers equipped with suspended screed and hydraulic power source, the control eliminates complicated electronic and mechanical adjustment.

Applications include: short-shoe adaptation for joint matching of mats without critical operator control; use with a roller follower device for predetermined grade information from an accurately placed rail or steel form; long-shoe adaptation to average previously cut grade variations.

For further information write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, Mattoon, Ill., or use the Request Card at page 18. Circle No. 44.

For more facts, use Request Card at page 18 and circle No. 324

ive pays off in all-job versatility!

For high productive capacity and all around work-ability Euclid "Twins" are way ahead of other scrapers of comparable size. No matter what your scraper requirements may be—"mountain goat" climbing ability, pushing through high rolling resistance sand and heavy going, or working in good dirt—all-wheel drive "Eucs" get more work done on every job.

Both the TS-14 and TS-24 have proved outstanding performers and big producers on a wide range of work from big yardage projects to smaller jobs. With separate Torqmatic Drives and power trains for each axle, these "Eucs" work on grades and under adverse job conditions that stall other scrapers. Each is a one-man earthmoving spread that can work without a pusher tractor... each has plenty of power and traction to pick up a heaped load in a hurry... pull out of the pit fast... and really highball on the haul to the fill and return.

If you want 14 or 24 yd. scrapers (20 and 32 yds. heaped) that can work more days per year... that can handle more kinds of work and give you bigger production... ask your dealer for the facts and figures that show why all-wheel drive Euclid "Twins" give you a better return on your investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



◀ **TS-14** 296 total h.p. ... struck capacity of 14 yds. ... 4-speed Torqmatic Drives with converter lock-up.



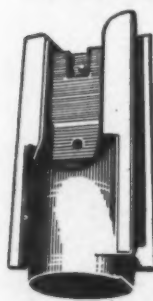
TS-24 563 total h.p. ... capacity of 24 yds. struck, 32 yds. heaped ... 27.00 x 33.5 tires with 33.5 x 33 optional.



EUCLID

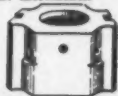
FOR MOVING EARTH, ROCK, COAL AND ORE

DEPENDABLE SEMI-STEEL PILE HAMMERS



PILE DRIVER HAMMERS

Well designed of tough close-grained semi-steel to give maximum impact for easy reworking. Can be adapted to fit present leads. Fast service in sizes 2000 lbs. to 4000 lbs. in 250 lb. increments.



FOLLOW BLOCKS

Sturdy semi-steel. Quick delivery on all sizes for hammers weighing 2000 lbs. to 4000 lbs.

SWINGING LEADS One Section All-Steel
Lengths 20' 25' 30' 35' 40'

Maintain your pile drivers at top efficiency with this low cost replacement equipment.

Buy Direct
From Manufacturer
and

Save!

WRITE NOW . . .
for detailed literature
and Low Factory Prices
. . . also other Paving
Contractor Equipment.



Sioux City Foundry & Boiler Co.

East 8th & Division SIOUX CITY 2, IOWA Phone 5-7967
For more facts, use Request Card at page 18 and circle No. 325

Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN



According to American Tractor Equipment Corp., the great weight and traction provided by rear mounting enables the Cat No. 12 or No. 14 motor grader with Ateco ripper to handle asphalt paving and other hard materials as ably as many crawler-mounted rippers.

Rear-mounted rippers for motor graders

Heavy-duty, rear-mounted, hydraulically operated rippers for Caterpillar No. 12 and No. 14 motor graders are available from the American Tractor Equipment Corp.

The company points out that these rippers are mounted on the rear of the grader frame so that the weight of the engine and final drive bring maximum down pressure on the ripper points. Rear mounting also retains steering control, improves traction, and keeps drive tires on smooth rather than ripped material.

The tool beam is controlled by two hydraulic cylinders. The standard tool beam will take up to 5 deep ripping shanks; an optional tool beam will take either 5 ripping shanks or up to 9 scarifier shanks for shallow ripping.

Standard ripping shanks for the No. 12 will rip to a 14-inch depth; optional, to 18 inches. For the No. 14, standard shanks rip to 13 inches; an optional shank to 17 inches. Scarifier shanks rip to 8 inches on the No. 12, to 7 inches on the No. 14.

Straight or curved ripping shanks and straight scarifier shanks are available. Replaceable points are offered in either heavy-duty or general-purpose designs. A scoring disk for scoring asphalt to control ripping area is also available.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 63.

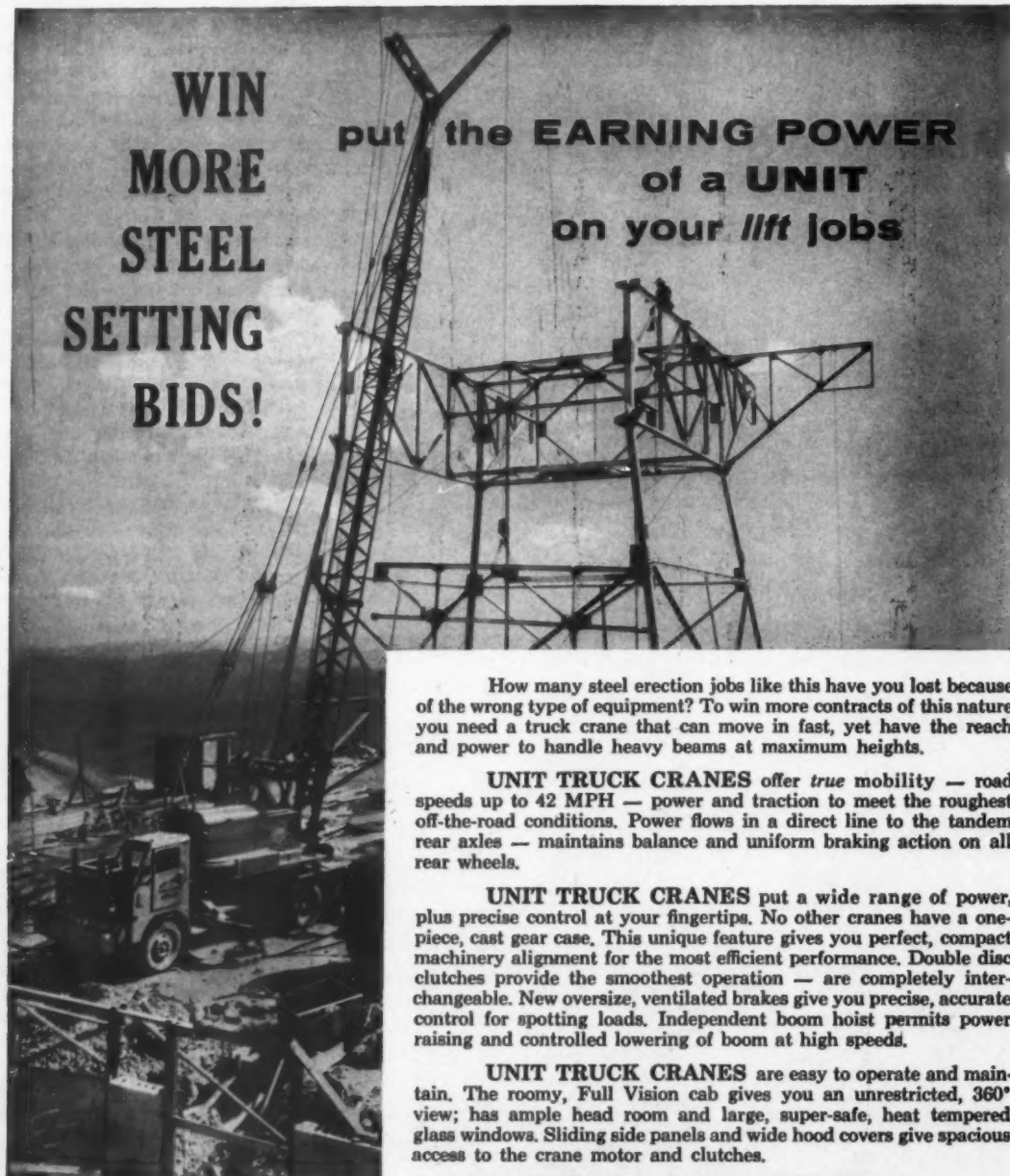
Engine-driven welders for rugged conditions

The Air Reduction Sales Co. has available a new line of engine-driven welders said to provide dependable service under rugged conditions while requiring only a minimum of maintenance.

A 225-amp ac-dc can handle stick electrode welding, Heliwelding, and Aircomatic welding. The power source supplies amperages from 15 to 265

WIN MORE STEEL SETTING BIDS!

put the **EARNING POWER** of a **UNIT** on your *lift* jobs



How many steel erection jobs like this have you lost because of the wrong type of equipment? To win more contracts of this nature you need a truck crane that can move in fast, yet have the reach and power to handle heavy beams at maximum heights.

UNIT TRUCK CRANES offer true mobility — road speeds up to 42 MPH — power and traction to meet the roughest off-the-road conditions. Power flows in a direct line to the tandem rear axles — maintains balance and uniform braking action on all rear wheels.

UNIT TRUCK CRANES put a wide range of power, plus precise control at your fingertips. No other cranes have a one-piece, cast gear case. This unique feature gives you perfect, compact machinery alignment for the most efficient performance. Double disc clutches provide the smoothest operation — are completely interchangeable. New oversize, ventilated brakes give you precise, accurate control for spotting loads. Independent boom hoist permits power raising and controlled lowering of boom at high speeds.

UNIT TRUCK CRANES are easy to operate and maintain. The roomy, Full Vision cab gives you an unrestricted, 360° view; has ample head room and large, super-safe, heat tempered glass windows. Sliding side panels and wide hood covers give spacious access to the crane motor and clutches.

UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — to handle most any lift job. Convertibility to all excavator applications brings you a plus value. Your UNIT dealer has full information on every model — and the famous UNIT crawler-mounted machines, too. Call him soon.



6309 W. Burnham Street
Milwaukee 19, Wisconsin

For more facts, use Request Card at page 18 and circle No. 326

SHOVELS ½ to ¾ YDS.

HOES ½ to ¾ YDS.

CRANES 5½ to 40 TONS

DRAGLINES ½ to ¾ YDS.

Product Parade—EQUIPMENT AND MATERIAL INFORMATION THAT CAN SAVE YOU MONEY

amp dc and 25 to 320 amp ac. This unit can also be utilized as an ac power plant for applications other than welding.

Two new dc welders are recommended for field welding where rough



usage is encountered. One, the Yellow Jacket, is offered in 300 and 400-amp sizes and is powered by a 4-cylinder, 4-cycle injection-type diesel engine, for service on pipeline and other heavy-duty construction jobs. Steady welding current is provided even for welding above the generator rating. It also features quick response to arc starts, controlled current peaks, and high recovery voltage.

Another welder—rated at 250 amp and utilizing a 4-cycle, 3-cylinder direct-injection-type diesel engine—is available both as a dc welder and ac power plant or solely as a dc welder.

For further information write to the Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 82.

New engineers' level has several features

Designed for efficiency, accuracy, and convenience in general engineering work, the Wild Heerbrugg Model N-2 level features a telescope that, together with the level vial assembly,



can be rotated about the optical axis for checking level adjustments quickly.

Other features include 24 or 28-power telescope with coated lenses; internal focusing; clamp and tangent screw; tilting screw with leverage; and coincidence-reading tubular level.

For further information write to Wild Heerbrugg Instruments, Inc., Dept. C&E, Main and Covert Sts., Fort Washington, N. Y., or use the Request Card at page 18. Circle No. 75.



This job-site batching plant features an output of 60 to 160 cubic yards per hour, depending on degree of automation and size of belt conveyor. According to the manufacturer, the unit can be dismantled and re-erected in three days. For further information write to The Fairfield Engineering Co., Dept. C&E, 324 Barnhart St., Marion, Ohio, or use the Request Card bound in at page 18. Circle No. 43.

BY CHOICE ...not by chance!



More
operators
specify Hendrix
Dragline Buckets

"A Type for Every Digging Purpose..."
1/4 to 40 Cubic Yards—Perforated or Solid



HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 327



Tilt-cab tractor line for on-highway use

The Reo Division of The White Motor Co. announces a new series of tilt-cab tractors for over-the-highway operations.

The DC Series consists of five models with gross vehicle weights ranging from 26,000 to 43,000 pounds and gross combination weights of 45,000 to 78,000 pounds. Four single-axle tractors and a tandem tractor are offered.

Two of the single-axle models are powered by the Reo Gold Comet 6-cylinder engine with horsepowers ranging from 145 standard to 185. Three larger models, including the tandem tractor, are powered by the Reo Gold Comet V-8 engine with 207 horsepower as standard and 235 horsepower available as an option.

The outstanding feature of the DC Series is the hydraulic tilting action of the cab to expose the engine and transmission for easy maintenance. A manually activating hydraulic pump tilts the cab to maximum opening in less than a minute. Tilting is unnecessary for routine checking, addition of oil and water, or for battery checking.

Five-speed, 8-speed, and ReoMatic transmissions are available on all five models.

For further information write to The White Motor Co., Reo Division, Dept. C&E, Washington Ave., Lansing 20, Mich., or use the Request Card at page 18. Circle No. 37.

Pocket-size radio has range to 1 mile

A pocket-size 2-way radio is offered by Globe Electronics, a division of Textron Electronics, Inc.

Called Pocketphone, the $1\frac{1}{2} \times 2\frac{1}{2} \times 16\frac{1}{4}$ -inch unit broadcasts and receives at distances up to 1 mile in the citizens broadcast band. No license of any kind is required to operate it.

According to the manufacturer, the radio's built-in Power-Pak battery may be recharged and will last up to one year without replacement. Microphone and speaker are built in, and a retractable antenna may be extended for broadcasting.

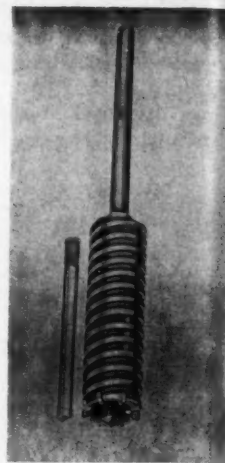
For further information write to Globe Electronics, a division of Textron Electronics, Inc., Dept. C&E, Council Bluffs, Iowa, or use the Request Card at page 18. Circle No. 40.

Core drill features special starter point

An easy-to-use starter point is the special feature of a new Tru-Start masonry core drill announced by Holub Industries, Inc. The drill is designed for drilling large holes in all kinds of concrete—including reinforced concrete—and in brick and stone.

The starter point accurately locates the hole center and holds it until the cutting teeth are engaged. According to the manufacturer, this speeds up the drilling because it eliminates the use of starting guides, templates, or chiseling a starting groove.

Tru-Start core drills with starter



SEE YOUR GARDNER-DENVER ROCK DRILL SPECIALIST BEFORE YOU BID YOUR NEXT JOB

points are made in twelve sizes from 1/8 inch to 2 1/2 inches.

For further information write to Holub Industries, Inc., Dept. C&E, Sycamore, Ill., or use the Request Card at page 18. Circle No. 8.

Drive for screw washers requires only one motor

Eagle Iron Works has introduced a new single-input, double-output-shaft gear-reducer drive for its line of double screw washers.

This drive provides the proper counterrotation of the screw shafts, with the advantage of being powered by a single motor, through a single set of V-belts. The single-motor drive

and positive gearing maintain proper, constant timing of the two screws needed to give maximum output capacity.

Only a single motor starter and wiring are required. A single gas or diesel engine may be used if electric power is not available.

This new drive will be standard equipment on the firm's 36, 44, and 54-inch-screw-diameter fine-material washer-classifier-dehydrators, and all 30 and 36-inch screw-diameter coarse-material washer-dewaterers.


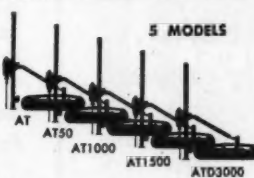
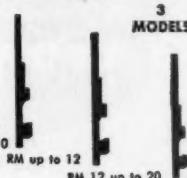
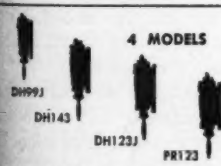
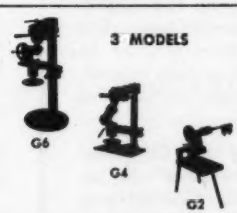

For further information write to the Eagle Iron Works, Dept. C&E, 159 Holcomb Ave., Des Moines, Iowa, or use the Request Card at page 18. Circle No. 4.



Powered by a wet-sleeve engine, the Model 125RG2 is designed for easy servicing.

Only Gardner-Denver matches 30 drill-carrier-feed combinations against any hardrock job

You can plan the blast-hole size and depth, the burden and spacing you need for fastest progress. Your Gardner-Denver rock drill specialist will help tailor your rig to meet these conditions. He chooses from the widest selection of crawlers, drills, feeds and accessories in the field.

CRAWLER DRILL	"AIR TRAC"®	CHAIN FEEDS
 <p>MODEL HT143</p> <p>Heavy-duty drill unit for open-pit mining, quarrying and general construction. Uses a broad range of bit sizes with long steel changes.</p>	 <p>5 MODELS</p> <p>From the basic, low-investment Model AT to the revolutionary swing-boom Model ATD3000 with fully automatic hydraulic power positioning.</p>	 <p>3 MODELS</p> <p>Powered by dependable 5-piston radial air motors with integral gear reducer drives to heavy-duty, rugged feed chains.</p>
ROCK DRILLS	BIT GRINDERS	DRILL STEEL
 <p>4 MODELS</p> <p>With 3-position steel rotation, for forward, neutral or reverse direction. News-making PR123 also provides rotation without impact, impact without rotation, or impact with rotation—drills up to 30% faster because it uses all hammer energy directly for percussion.</p>	 <p>3 MODELS</p> <p>Sharp bits make hole faster and increase drill steel life. Sharpen bits in the field to save time, have the bit when you need it. A model for any size bit.</p>	 <p>HI-LEED® DRILL STEEL 2' to 20' LENGTHS 1 1/4" AND 1 1/2" HEXAGON</p> <p>Always uncouples with ease. Snug fit of mating parts increases wear life. Firm connections prevent lost rods.</p> <p>*T.M.</p>

Complete information in one book. With this booklet and the help of your Gardner-Denver rock drill specialist, you can select the right rig combination to help your next contract reap bigger profits. For your free copy, write for Bulletin CDAT-1.



EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 328

Increase horsepower of rotary compressor

A new 125-cfm rotary portable air compressor, which has more horsepower and is designed to reduce service costs, has been announced by the Le Roi Division of the Westinghouse Air Brake Co.

Designated Model 125RG2, this compressor is powered by a Le Roi Model D226 53-hp wet-sleeve engine said to provide 60 per cent power surplus. At 1,600 rpm, this slow-turning engine reduces both engine and compressor parts wear, according to the manufacturer.

Diesel and utility models of the new 125 rotary are also available.

Dry weight of the Model 125RG2 is 2,190 pounds.

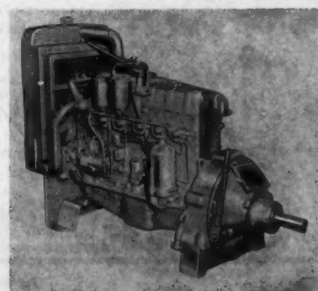
For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, Sidney, Ohio, or use the Request Card at page 18. Circle No. 20.

Many applications for 77-hp diesel engine

Allis-Chalmers offers its D-262 diesel engine, designed to develop 77 horsepower at 2,200 rpm for a wide variety of applications.

The engine has a 3 9/16 x 4 3/8-inch bore and stroke, and a 262-cubic-inch piston displacement. It features replacement wet-type cylinder sleeves, full pressure lubrication, and efficient air and oil filtering systems. It has a 12-volt electric starting system.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 11.



THE LATEST IN DIAPHRAGM PUMPS!

Another new LAYTON PNEUMATIC PUMP

• Powered by compressed air for more effective, more efficient pumping of liquids containing high percentage of solids or just plain water. Requires just 20 c.f.m. of air at 100 p.s.i. Discharges 6300 g.p.h. at 10 ft. discharge head — 2160 g.p.h. at 100 ft.

• Layton pumps are one-man portable . . . self-priming . . . quiet in operation . . . safe . . . fireproof . . . odorless. Submerge in liquid or use suction hose.

• The handiest pumps for dewatering trenches, caissons, shafts, foundation holes, tunnel headings, sumps, sludge.

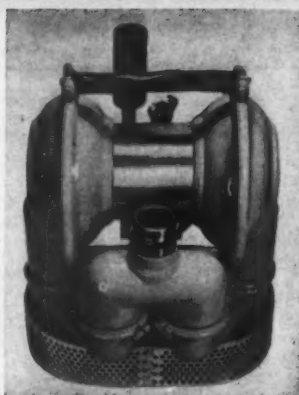
• Distributors in ALL Principal Cities — Write for Catalog or Further Details

LAYTON CO., INC.

P.O. BOX 87A, CUDAHY, WISC.

Phone: HUMBOLDT 1-4400

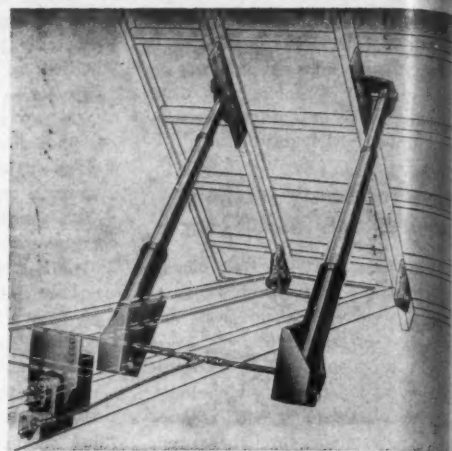
For more facts, use Request Card at page 18 and circle No. 329



• Model DA-4; Weight 79 lbs., Height 21", Length 16 3/4", Width 16 1/4".

Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN

The new mount-it-yourself Gallion hoist is designed for body platform lengths of 11 to 13 1/2 feet. Gvw range is 10,000 to 19,500 pounds.

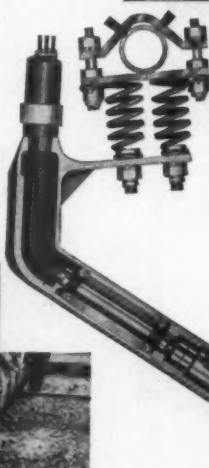
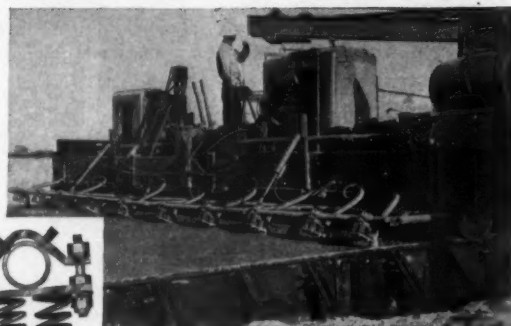


Contractor Saves \$32,000 on ONE job! —with MAGINNISS VIBRATOR ATTACHMENT

Dale Benz, Inc. of Phoenix, Arizona, general contractor for the U.S.M.C. Supply Depot at Yermo, California, saved approximately one-half sack of cement per yard on 65,000 cu. yds. of concrete floor in the repair shops and pavement in the parking area.

This \$32,000 saving was on concrete specifications which called for 5.8 sacks of portland cement per yard with approved internal vibration — or 6.3 sacks if internal vibration was not used.

On the Yermo job, the approved MAGINNISS Hi-lectric Vibrator Attachment was mounted on the concrete spreader. On jobs of limited runs between equipment moves, where a spreader cannot be used economically, the same Maginniss Attachment can be mounted on the concrete finisher in front of the front screed. There it will assist in spreading the mix, as well as perform its primary function of INTERNAL vibration.



MOTOR IN HEAD... packed with power!

The MAGINNISS Vibrator has only two moving parts; no brushes, commutators, gears, flexible shafts, complicated air or fluid drive mechanisms to require costly repair or replacement. The 180 cycle induction motor—located in the vibrator head

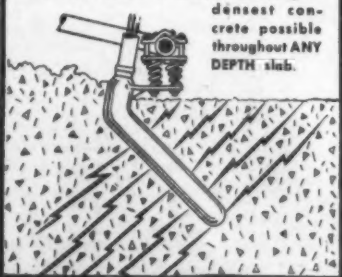
—is cooled by the surrounding concrete. The angled or horizontal positioning of the vibrators below the surface of the slab assures a uniform mixture of aggregate and mortar from base to surface regardless of depth. The MAGINNISS Vibrator handles the stiffest mixes easily.

You too can get improved quality and increased production on airports and highways, as well as structural jobs, with MAGINNISS Hi-lectric Vibrators. Fill out and return the coupon, or call your Maginniss Distributor—he's listed in 85 cities under "Contractors Equipment" in the Yellow Pages.



DEEP-PENETRATING VIBRATIONS

With MAGINNISS Vibrators, the vibrations travel outwardly at right angles from the vibrator head. Thus, by setting the heads at proper position—HORIZONTAL OR ANGLED—even distribution of the vibratory action is assured, resulting in densest concrete possible throughout ANY DEPTH slab.



- ☐ CONCRETE STREET, HIGHWAY, and AIRPORT PAVING VIBRATORS
- ☐ VIBRATORY SCREEDS
- ☐ STRUCTURAL VIBRATORS (180 Cycle Heavy Duty)
- ☐ STRUCTURAL VIBRATORS (AC-DC Light Duty)
- ☐ PENCIL VIBRATORS
- ☐ VIBRATORY SOIL COMPACTORS

MAGINNISS POWER TOOL CO.

154 Distl Avenue, Mansfield, Ohio

RETURN THIS COUPON TODAY!

MAGINNISS POWER TOOL CO.

Dept. W-46, Mansfield, Ohio: Date _____

Please send me literature on items checked at left.

Individual _____ Title _____

Firm or Dept. _____

Street _____

City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 330

Conversion-hoist package easily mounted by user

An outside-mount, 2-stage, duo-scope conversion-hoist package, available from the Gallion Allsteel Body Co., is easily mounted by the user directly on the truck frame, with no subframe needed.

Adaptable to any wood or steel platform or stake body for general contractor use, the unit is offered in body platform lengths of 11 to 13 1/2 feet, with cab-to-axle dimensions of 84 to 102 inches recommended. The duo-scope units have a 45-inch stroke providing a 45-degree dump angle. Gvw range is 10,000 to 19,500 pounds, and payload rating is to 14 tons depending on body length and pivot.

For further information write to the Gallion Allsteel Body Co., Dept. C&E, Gallion, Ohio, or use the Request Card at page 18. Circle No. 3.

Saws are redesigned for operator safety

Collins Abr-A-Saws, in standard, bench, and trailer models, reportedly have been redesigned for faster, easier, and safer operation.

The saws now feature a heavy-duty operator protector mounted on the front of the unit. The protector is designed to catch all flying bits of abrasive, should breakage occur.

All Abr-A-Saws now have wheel guards reinforced on the outside diameter for added protection and rigidity.

Bench and trailer models are now (Continued on page 100)



CONTRACTORS AND ENGINEERS



This Diebold open-shelf power file is 10 feet high. It has 16 shelves with a capacity equal to six 4-drawer file cabinets.

Open-shelf files are power-operated

Open-shelf, electric-powered, push-button-operated files are announced by Diebold, Inc.

Designed to handle documents of any practical size, these power files are available in three standard models with 12, 14, and 16 shelves. All shelves rotate in an upright position with a 3-second cycle between successive shelves.

A priority pilot directs the unit to the shortest route, reducing travel time to a minimum. Standard models have either 38 or 50-inch-wide openings and are available for letter or legal-size records.

For further information write to Diebold, Inc., Dept. C&E, Canton 2, Ohio, or use the Request Card at page 18. Circle No. 64.

Rotary drill converts to power hammer

An improved hammer that converts a rotary drill to a power hammer for masonry anchoring has been introduced by The Rawplug Co., Inc., of New Rochelle, N. Y.

Designed especially for fastening fixtures overhead, the unit uses percussion drills said to be serviceable until worn down to less than one-third of their original length.

Attached to a 1/4-inch high-speed rotary drill, the hammer will drill holes, even in hard masonry, for Rawplugs and similar anchors for screw sizes from No. 6 through No. 20. It is adjustable for light, medium, or heavy blows.

An improved automatic clutch engages only when the drill point touches masonry, reducing drill wear and making operation safer and easier. Weighing only 2 3/4 pounds, the drill-hammer has a rubber-covered handle that folds flat along the hammer barrel when not in use.

For further information write to The Rawplug Co., Inc., Dept. C&E, 348 Petersville Road, New Rochelle, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 39.

Loader attachment rated at 1 1/4 yards

A front-end loader attachment with 1 1/4-cubic-yard (SAE-rated) capacity is available for the Kwik-Mix Hi-Lifter.

This attachment digs 94 inches wide and has 8 1/2-foot dumping height, 40-degree bucket roll-back at ground level, 50 degrees at dumping height, and 9,000 pounds breakout force. Maximum lifting capacity is 8,500 pounds.

The manufacturer points out that the entire front-end operating mechanism pivots ahead of the operator for maximum safety and visibility.

For further information write to

the Kwik-Mix Co., Dept. C&E, 235 W. Grand Ave., Port Washington, Wis., or use the Request Card at page 18. Circle No. 31.



The Kwik-Mix front-end loader attachment is designed to pivot ahead of the operator, providing maximum safety and visibility.

The BIG LIFT you need to move faster in 1961!



SCHWARTZ Heavy Duty Hydraulic RAMP HOIST with WINCH

ONE MAN OPERATION

The complete operation of the SCHWARTZ RAMP HOIST is done hydraulically so only one man is required to load, transport, and unload equipment. The heavy winch cable is attached to the equipment and the powerful winch pulls the load up the inclined ramp. When in place, the ramp is hydraulically lowered into place and you're ready to roll at highway speeds.

QUALITY CONSTRUCTION

- Lift frame constructed of 7-inch "I" beams.
- Winch cable is 5/8" 6x31 IWRC steel, 34,000 lb. rating.
- Two 5-inch double acting hydraulic lift cylinders.
- Models to fit factory tandems or locally installed tandems, 120" cab to tandem center or longer.
- Fold-down approach plate available. This provides heavy steel bumper while in transit.



FINGER TIP CONTROL

All of the loading and unloading operations are controlled by means of a push-button switch on a 30-foot cable. The operator has full view of the operations at all times.



For full information, write Dept. RH-13

SCHWARTZ MANUFACTURING COMPANY

LESTER PRAIRIE 1, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 331

(Continued from page 98)

designed to accommodate 20-inch-diameter abrasive wheels for increased economy.

For further information write to the Collins Machinery Corp., Dept. C&E, 955 Monterey Pass Road, Monterey Park, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 117.

Motorized pretensioner for prestressing

A motorized pretensioner for single-strand prestressing is offered by the Simms Engineering Co.

According to the manufacturer, the



Members are bolted to the base of the Simms' pretensioner, for ease of dismantling. Hydraulic controls are mounted on the frame and are complete.

unit is positioned only once and can jack against two upright beams capable of withstanding 15 tons.

The ram is mounted on a special roller frame, and horizontal positioning is accomplished by pushing on the ram. Vertical adjustment is accomplished by turning the handle on the drum switch. Drum switch and motor are connected so that the carriage can be raised or lowered.

The ram has a 15-ton capacity and 48-inch ram travel. There are two rubber-tire swivel and two rubber-tire rigid casters for moving from one bed to another.

For further information write to the Simms Engineering Co., Dept. C&E, 5301 W. Patterson Ave., Chicago 41, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 118.

Operator walks behind material-handling truck

Getman Bros. announces the Scoot-Crete Model WN-12 material-handling truck.

Designed to be operated by one man walking behind the truck, the unit has a carrying capacity up to 1 ton, and its over-all length and width are 72 and 35 inches, respectively.

The 3-wheel vehicle is controlled directionally by handle-bar steering through the rear caster wheel. Brakes and throttle are controlled by simple squeeze-type hand-operated levers located on the handlebars.

The WN-12 is powered by a Wisconsin Model AENLD motor developing 9.2 horsepower, and has two speeds forward and one reverse. It is equipped with an automatic centrifugally operated clutch controlled by engine speed which permits the driver to move the vehicle an inch at a time or at walking rate. Reversing is controlled in the same manner.

The unit is available with either the hopper-type dump body, holding 12 cubic feet, or with a platform body that is interchangeable with the hopper body in a matter of minutes. It has sufficient power to carry its full capacity up a 20 per cent incline.

For further information write to Getman Bros., Dept. C&E, South Haven, Mich., or use the Request Card at page 18. Circle No. 84.

Stabilized-base-mix plant features portability

A new portable, stabilized-base-mix plant that includes pugmill, conveyor, and bins, plus piping and metering equipment—all mounted on wheels—has been announced by the Universal Engineering Corp.

Called Thoro-Mix, the plant is available in capacities up to 500 tph.

The pugmill, either twin or single-shaft, is mounted at the end of a full 24-inch conveyor, and at heights well above the truck dumping minimum.

Mixing is in a confined, self-lining tub with either twin or single shafts,

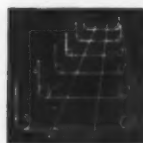
depending on the requirements. Paddles on the shafts are removable and reversible. They can be reversed to retard movement of material through the tub, providing more thorough agitation. Tips are replaceable.

The pugmill folds back with the conveyor end for transportation, and the entire unit has the same clearance as the bin.

For further information write to the Universal Engineering Corp., Dept. C&E, 625 "C" Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 19.



SYLGAB
STEEL and
WIRE ACCESSORIES
for Fast
FIREPROOFING
of Structural Steel



**RIGID
BEAM
CLIP**

5' lengths
— installed with lightning speed.
Made of #12 or #10
gauge galvanized.

**HAUNCH
STIFFENER**

for beams over
16" deep. Made
of #10 or #12 gauge
galvanized wire.



**TOGGLE
HANGERS**

More rigid than
any wire. Used in
conjunction with
SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality—Service
Ease of Installation



SYLGAB
STEEL & WIRE CORP.

79-05 Cooper Ave., B'klyn 27, N. Y.
BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS

STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 335



TRUCO® DOES IT AGAIN!
80% cost reduction in airport
runway lighting by installation
of pancake lights



Above: Drilling holes for light units.
Left: Cutting slot raceways for wiring.

Truco "pancake" diamond drill on Truco Model G, gasoline powered, truck-mounted drill rig cut holes for light units 6" dia. x 2" deep. Truco Concrete Saw with 14" Truco diamond blades sawed miles of slots for wiring raceways in both bituminous and portland cement concrete runways. Even greater savings now possible using new Tru-Vac® Vacuum Pad to anchor drill rig in seconds. Write for our new Catalog.



MASONRY DRILLING DIVISION
WHEEL TRUEING TOOL COMPANY

174-3200 W. Davison, Detroit 38, Mich. • 575 Langlois, Windsor, Ont.

For more facts, use Request Card at page 18 and circle No. 336



High-Speed, Heavy-Duty Hydraulic Trencher for
GENERAL CONSTRUCTION



Trench up to 16" wide, depths to 6'... dig in any kind of soil. Speedy 30 HP K-1 Ditch Witch trenches for service lines, footings, etc., in money-saving time. Compact, powerful, it offers 4-wheel hydraulic drive, 4-speed transmission, hydraulically-operated boom and backfill blade.

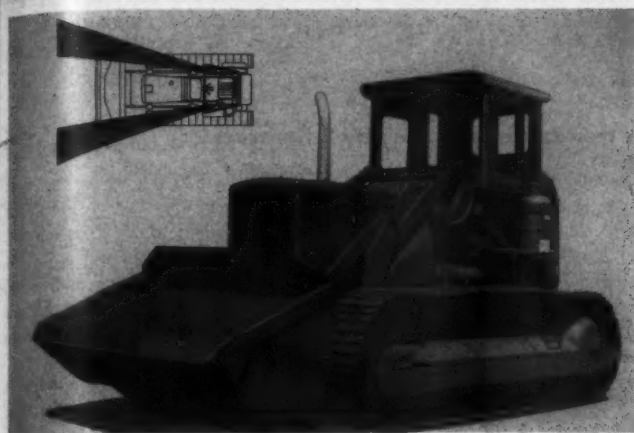
30 HP Model K-1
shown here

OTHER SIZE DITCH WITCH, 7
TO 12 HP, DIG UP TO 12"
WIDE & UP TO 5' DEEP

Manufactured by the **CHARLES** Machine Works, Inc.

636 B STREET • PERRY, OKLAHOMA • CALL COLLECT FE 6-4404
For more facts, use Request Card at page 18 and circle No. 337

CONTRACTORS AND ENGINEERS



Rugged excavator cabs increase field of vision

A wider field of vision, with its accompanying advantages, reportedly is provided for operators of Caterpillar Traxcavators by newly designed Vu-All cabs available from Crenlo, Inc.

The heavy glass windshields are vertically mounted to minimize dust collection and are tinted and shatter-proof. Heavy-duty steel—which goes into 12-gage body panels and 16-gage double walled doors—is also used throughout for durability and operator protection.

Operator comfort is improved by a swinging rear window and by doors that can be held open for ventilation. An acoustical ceiling reduces noise level and provides insulation.

Designed to accommodate all combinations of hydraulic control valves without modification, Vu-All cabs are easily installed and removed from Traxcavators, states Crenlo.

For further information write to Crenlo, Inc., Dept. C&E, 1600 Fourth Ave. N. W., Rochester, Minn., or use the Request Card at page 18. Circle No. 90.

According to the manufacturer, Crenlo Vu-All cabs are designed to permit up to 70 per cent wider view of the operating area.



AT THE TOUCH OF A BUTTON

the Electrol GenerAc will supply shop-type electrical power from your truck, car or tractor — anytime, anyplace.

This high-output, 115/230-volt, 60-cycle alternator is available in a size for your every requirement.

Mounting is simple, with kits available for all popular makes of vehicles.

Write to

GenerAc Sales Inc.

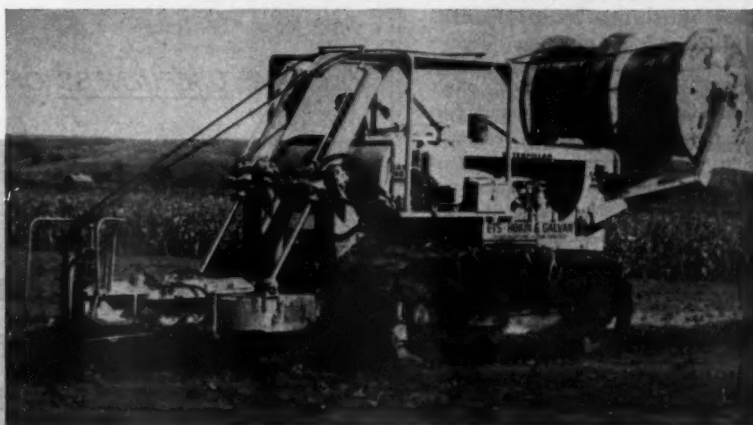
124 S. Main Street
Wales, Wisconsin

For more facts, use Request Card at page 18 and circle No. 339

IMPORTANT NEW PRODUCTS

IF YOU HAVE CABLE TO LAY...

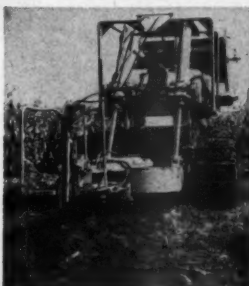
here's the newest, fastest, most profitable method!



In our vast missile base construction program alone, there will be an estimated 100,000 miles of underground cable to be laid. Heretofore this work has been both time-consuming and costly with trenching providing the most accurate method of placing cable in the ground.

Now, the Kelley Products Division of Crutcher, Rolfs, Cummings, Inc., Houston, Texas, introduces a cable laying attachment for all models of Caterpillar track-type Tractors equipped with a Cat hydraulic control unit. Cable is precisely laid at specific depths in a fraction of the time formerly required and with 60 to 90 per cent less cost.

The new Kelley Cable Layer puts down any cable up to 3 1/2" O.D. at depths ranging from a 12" minimum with the D4 to a 72" maximum with the D9. The laying shank is far enough behind the tractor to permit unrestricted maneuvering without deviating from the cable line yet close-coupled enough to provide accurate control of depth and position. Vertical movement of the tool bar is attained by two 7" hydraulic cylinders with 48" stroke. Lateral movement, also hydraulically

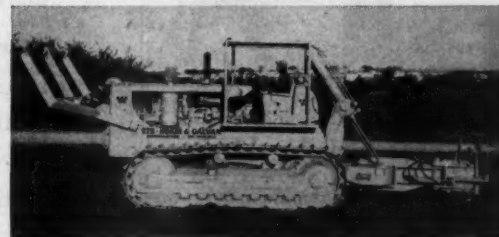
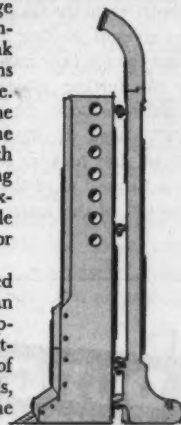


steel with replaceable leading edge and point. The cable guide or conduit, attached to the ripping shank with hardened pins, swivels and opens for easy removal or insertion of cable. A roller section, at the bottom of the conduit, guides the cable into the channel created by the ripper with the very minimum of drag, bending and friction. Cable pull rarely exceeds 100 lbs. with the Kelley Cable Layer though cable is designed for much higher load.

Cable reel carriers, front-mounted for better balance and visibility, can be custom-engineered for specific applications. Control is by a Cat front-mounted Cable Unit. Full reels of cable, weighing up to 7000 pounds, are automatically unreel by the drag or pull on the line.

On actual cable-laying contracts, the Kelley Layer averages about a mile of cable each hour. When a Kelley extra-heavy duty Ripper is used in conjunction to open a path for the Cable Layer, production is profitably boosted. The speed and accuracy of the Kelley Cable Layer reduces costs over previously-used methods by 50 to 60%!

Kelley Cable Layers have already proven their ability on several major construction projects. If there is cable to lay on a contract, present or future, contact your Caterpillar Kelley Dealer for more information on the new money-making Kelley Cable Layer.

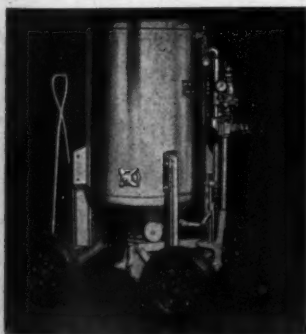


KELLEY PRODUCTS DIVISION
Crutcher-Rolfs-Cummings, Inc.

P.O. BOX 2073
HOUSTON 1, TEXAS

5708

For more facts, use Request Card at page 18 and circle No. 340



RUEMELIN SAND BLASTS

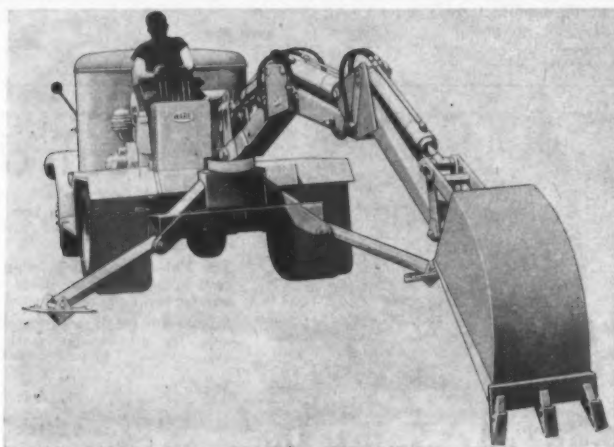
... provide fastest cleaning action. Remove rust, paint, scale from highway equipment, ready-mix drums, rail or highway bridges, water towers.

Available in several sizes, in stationary or portable mountings. Hi-speed trailer mounts permit easy handling. Units available with wet nozzles and remote controls at nozzle for instant stop and start control.

Write for descriptive bulletin.

RUEMELIN MFG. CO.
3887 No. Palmer St., Milwaukee 12, Wis.

For more facts, circle No. 338



The Hydro-Trencher Model 600TM develops 38,000 pounds of digging power.

New trencher mounts on any 2-ton truck

Ware Machine Works, Inc., announces the Hydro-Trencher Model 600TM.

This $\frac{3}{4}$ -yard unit has a digging reach of 19 feet, and digs to a depth of 12 feet 6 inches. Clear dumping height is 11 feet 11 inches at a reach of 13 feet 5 inches.

A 42-hp gasoline engine is standard.

Lifting capacity at full radius is 2,200 pounds. Buckets are available

in widths of 12, 14, 16, 18, 22, 24, 30, and 36 inches.

The machine's many design features include a cushioned 265-degree heavy-duty chain swing to facilitate working in confined areas. This unit mounts on any 2-ton truck or heavier conventional truck chassis.

For further information write to Ware Machine Works, Inc., Dept. C&E, Ware, Mass., or use the Request Card at page 18. Circle No. 22.

Bottom-dump train offers full-width spreading

Challenge-Cook Bros., Inc., offers a new lightweight bottom-dump train for full-width spreading of aggregate and road-base material. This C-B spreader train is designed for use with standard 2-axle tractors, and will haul up to 28-ton legal payloads, according to the manufacturer.

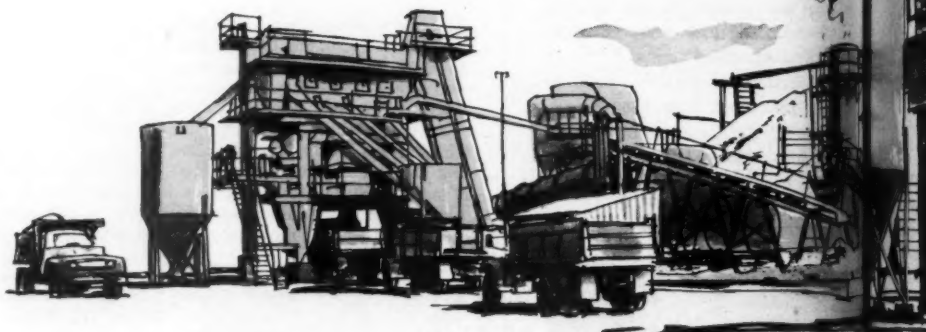
Vertical hopper sides, together with 20 x 86-inch gates, permit the operator to spread material 8 feet wide. Positive, 2-way gate control from inside the truck cab (power opening and closing) provides precision control of material to uniform desired depth while the train is on the move. As a result, blading is eliminated except for the final pass.

For further information write to Challenge-Cook Bros., Inc., Dept. C&E, Dept. 13, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 119.

THE USEFULNESS OF A LIMA MADSEN



GET UP TO 350 TPH WITH LOWER OPERATING COSTS PLUS CLEANEST OPERATION



Lima Madsen Asphalt Plants are big tonnage producers. They've proved this over and over again—even on the most exacting mix specifications. Built in batch capacities from 1000 to 10,000 lb. . . there's a size and model—portable and stationary—to meet every asphalt mixing need.

Lima Madsen Asphalt Plants give you many money-making advantages. Better materials and superior workmanship reduce maintenance, add years of profit-making production. Better engineering increases accessibility for normal servicing. The Madsen Twin-Shaft Pug Mill Mixer combined with the Madsen Asphalt Pressure Injection System (Pat.) gives the operator of a Lima Madsen Plant the means of getting the fastest and most thorough mixing action in the industry. Fast, precision timing and weighing, a smooth cycle of operation with no bottlenecks and easier operating with less operator fatigue . . . these are some of the advantages you get with a Lima Madsen Asphalt Plant. See your distributor for the complete story or write us for free literature.

6103

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY
TO
400 TONS

FOR:
PILE
TESTING
UNDER-
PINNING
BRIDGES
PIPE
PUSHING
SOIL TESTING



DESIGNERS and
MANUFACTURERS OF
Hydraulic Units
For Special
Applications

**RICHARD
DUDGEON INC.**

789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

For more facts, circle No. 341

Portable dredge works at depths to 70 feet

A new portable dredge, featuring a rugged ladder design that permits working at depths of 40 to 70 feet, is offered by the American Marine & Machinery Co., Inc.

According to the manufacturer, this dredge, designated Hydra-Drive, can easily be trucked over the highway and assembled in one day. Models are available with capacities from 50 to 1,000 cubic yards per hour.

For further information write to the American Marine & Machinery Co., Inc., Dept. C&E, 201 Woodcrest, Nashville 11, Tenn., or use the Request Card at page 18. Circle No. 69.



The Pacemaker Series K-104, 840-hp Power-Dozer is an all-wheel-drive, diesel-electric-powered unit with a measured drawbar pull of 90,000 pounds at 2 mph.

Three models offered in electric-tractor line

A new line of Pacemaker diesel-electric tractors for heavy-duty pushing and dozing has been announced by R. G. LeTourneau, Inc.

These tractors are all-wheel-drive machines with individually powered LeTourneau Electric Wheels for propulsion. Each wheel has its own dc electric motor and gear reduction built inside the rim. Electric generators are direct-coupled to the machines' diesel engines to power the motors.

A 3-wheel tractor designated Series K-53 Tug-Dozer weighs approximately 80,000 pounds, is powered by a 420-hp diesel engine, and rolls on 75-inch-diameter tires. A modification of this machine, the Series K-53F, is equipped with 89-inch tires and is intended especially for operation in sand and other areas where high flotation is necessary.

Also in the 420-hp class, with an identical power plant, is the Series K-54 Power-Dozer—a 4-wheel machine with 75-inch tires and a center-pivoted frame for steering. It weighs 86,000 pounds.

The biggest machine in the line is the Series K-104 Power-Dozer. It carries two 420-hp diesel engines.

All of the new tractors feature the same power and speed for either direction of travel; electric-powered steering; and a high degree of maneuverability, particularly in the 3-wheel units. According to the manufacturer, the individually powered Electric Wheels maintain an almost continuous level of tractive effort despite variations in wheel loading due to turns or to differences in traction from wheel to wheel.

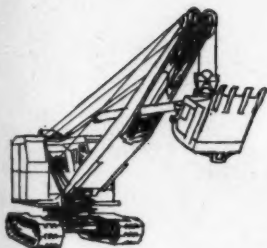
For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 26.

Compact 2-way radio is medium-power unit

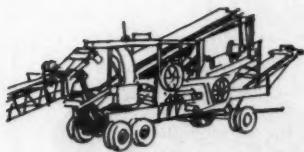
Featuring a fully transistorized power supply and rugged, compact design, Du Mont announces a 15-watt version of its recently developed Transicom 2-way radio for use in the 144 to 174-mc band.

Designated Model 326A, the unit is designed to be mounted under the dash.

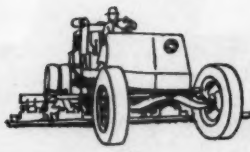
For further information write to the Allen B. Du Mont Laboratories, Dept. C&E, 760 Bloomfield Ave., Clifton, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 58.



LIMA SHOVELS to 8 yd.; interchangeable as cranes to 140 tons on crawlers, 80 tons on rubber-draglines variable.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment. Simplified design, easy maintenance.



LIMA MODEL D ROADPACKER—Fast, deep vibratory compaction for single-course construction; available in Super model.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA MADSEN Asphalt Paving Plants and Equipment
BALDWIN · LIMA · HAMILTON
CONSTRUCTION EQUIPMENT DIVISION · LIMA, OHIO



For more facts, use Request Card at page 18 and circle No. 342



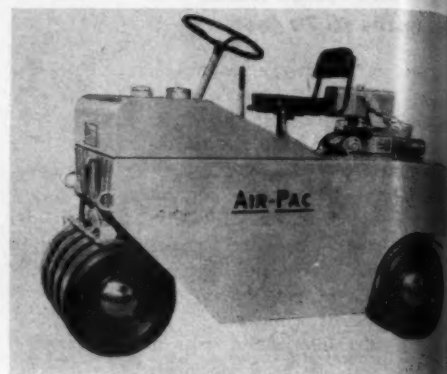
Building up Seawall at Baltimore Marine Terminal.
Contractor: Empire Construction Co., Baltimore

Symons Steel-Ply Forms Used in Tight Quarters

Three 6-foot high-walls, each 1200 feet long, with an additional 200 feet curved section at the outer end had to be formed within a working space of 39 feet. The only bracing required was the double 2 x 4 walers at the top and bottom of the forms. Sections were easily handled by one workman. Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. B-1, Chicago 39, Illinois.

For more facts, use Request Card at page 18 and circle No. 343

Product Parade—YOUR HEADQUARTERS FOR DATA ON NEW EQUIPMENT



The Rosco Air-Pac roller features a total working weight of 2 tons. Working speeds range from 0 to 3½ mph in both forward and reverse.

Pneumatic-tire roller turns in 10-foot radius

A new and compact pneumatic-tire roller is introduced by the Rosco Mfg. Co.

Designated Air-Pac, the roller has a rolling width of 36 inches and a turning radius of 10 feet. Four cushioning pneumatic-tire wheels are located in front, and five at the rear. Tires are 4:00 x 12, 4-ply, and have wide treads, and smooth faces.

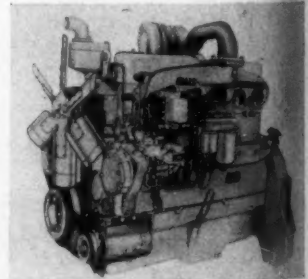
The Air-Pac roller weighs 1,870 pounds empty. Ballast capacity is 15 cubic feet. The total working weight of the roller is 2 tons. Working speeds in both forward and reverse are 0 to 3½ mph.

Two water tanks for spraybars are standard; they have a combined capacity of 26½ gallons.

For further information write to the Rosco Mfg. Co., Dept. C&E, 3128 Snelling Ave., Minneapolis 6, Minn., or use the Request Card at page 18. Circle No. 92.

Expand engine line with two new diesels

Allis-Chalmers has expanded its diesel-engine line with the addition of a 145-hp naturally aspirated Model 10000 engine and the 210-hp turbocharged 11000 engine. Horsepower ratings of both are 2,200 rpm.



The new engines are 6-cylinder units, with 516-cubic-inch piston displacement, 4 7/16-inch bore, and 5 9/16-inch stroke. Both the 10000 and the 11000 are available as either open or closed power units; as off-highway engines; packaged torque-converter units; and for diesel electric sets.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 77.

This material hoist makes money for you!

TOW...

FLIP!...

...IT'S BRACED,
READY
FOR WORK!

Sasgen SELF-ERECTING LIFTAMATIC HOIST

GOES UP IN 2½ MINUTES—A ONE-MAN JOB!

This is the hoist that goes where you go, does what you want it to do—safely and dependably, built for heavy-duty service. Can be disassembled and shipped anywhere by common carrier.

Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—production is limited.

Sasgen DERRICK COMPANY
MANUFACTURERS OF EQUIPMENT FOR THE CONSTRUCTION INDUSTRY

3127 WEST GRAND AVE.
CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 344

FINEST CARBON and ALLOY STEEL CASTINGS

by *Farrell-Cheek*

A HUGE LINE

Hardly a phase of U. S. construction is without the use or need of these products.

WRITE FOR THE
CATALOGS YOU NEED!

- * CATALOG NO. 21—SPROCKETS
- * CATALOG NO. 22—WIRE ROPE FITTINGS AND ACCESSORIES
- * CATALOG NO. 23—CONVEYING NEEDS
- * CATALOG NO. 24—WHEELS AND ROLLERS
- * SPECIFICATIONS

**FOUNDRIEMEN
FOR OVER
FIFTY YEARS**

We vouch for the design and production quality of our castings . . . and we vouch for the benefit they can be to your operation. However, you must become acquainted with F-C castings to best know how they can serve you.

PLEASE ALLOW US TO SEND YOU THOSE CATALOGS WHICH ARE OF PARTICULAR INTEREST. YOUR INQUIRY WILL BE GIVEN IMMEDIATE ATTENTION.

FARRELL-CHEEK STEEL COMPANY
103 LANE STREET, SANDUSKY, OHIO

For more facts, use Request Card at page 18 and circle No. 345

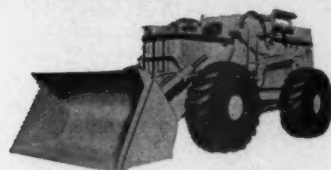


How To Effectively Key Your Bidding And Buying!

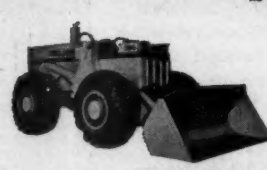
Making a successful bid and coming up with an adequate profit is a rare art in these times, but *it can be done* if machine capabilities and job requirements can be closely and accurately matched . . . TROJAN gives you the opportunity to make the most of your own experience and judgment in matching job and machine for maximum profit . . . With 7 machines available in lifting capacities of 7,000 to 24,000 lbs., with bucket options, power options and attachment options; you can key bucket capacity to required power with almost pin-point accuracy . . . There's no need to compromise — no need to buy more or less work capacity than you actually need . . . And, in addition, with every TROJAN you get the tested and proven features of design and construction that permit your operator to tackle the toughest jobs hour after hour, day after day — and complete them safely, swiftly and profitably . . . Most TROJANS sell themselves to hard-boiled buyers at competitive demonstrations against any machine on the market because they are built right, priced right and are 'honeys' to handle . . . Want more details or a field demonstration? Just call your nearest Trojan distributor.



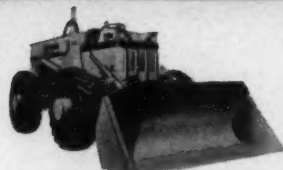
AD NO. 44-37



MODEL 404
LIFTING CAPACITY 24,000 LBS.



MODEL 304
LIFTING CAPACITY 18,000 LBS.



MODEL 254
LIFTING CAPACITY 15,000 LBS.



MODEL 204
LIFTING CAPACITY 12,000 LBS.



MODEL 164
LIFTING CAPACITY 10,000 LBS.



MODEL 134
LIFTING CAPACITY 8,000 LBS.

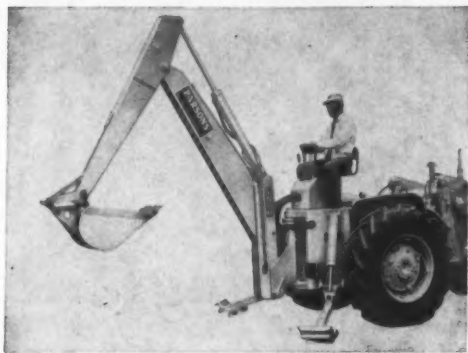


MODEL 114
LIFTING CAPACITY 7,000 LBS.

TROJAN[®]
TRACTOR SHOVELS
YALE & TOWNE

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

For more facts, use Request Card at page 18 and circle No. 346



Tractor-mounted backhoe digs to depth of 15 feet

A new large-capacity, tractor-mounted backhoe, the Parsons-Shawnee Model 1500, has been announced by the Parsons Co.

This hoe has a digging depth of 15 feet; a loading height of 12 feet 6 inches; and a 20-foot 8-inch reach.

The Model 1500 mounts on all popular makes of utility tractors—new or used—with only four pins, providing fast, easy attaching and detaching.

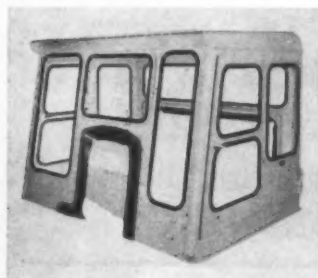
Features include: rubber stops mounted on each side of the frame to cushion the pivot assembly; telescoping nonskid stabilizers; adjustable bucket to handle all types of excavating including straight-down digging; and automatic wear compensation on swing mechanism to eliminate adjustment.

For further information write to the Parsons Co., Dept. C&E, P. O. Box 431, Newton, Iowa, or use the Request Card at page 18. Circle No. 15.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Crawler-tractor cab of 1/4-inch steel plate

A cab for crawler tractors, featuring all four sides and doors made from 1/4-inch steel plate, is announced by the Industrial Cab Co.



According to the manufacturer, there is very little increase in weight over regular construction.

A full selection of throwout windows is offered as optional equipment.

For further information write to the Industrial Cab Co., Dept. C&E, 36 Jefferson Ave., Salem, Mass., or use the Request Card at page 18. Circle No. 112.

Tough one-piece point for big-capacity shovels

The Model 40-L all-forged one-piece point for shovels of 8 to 9-yard capacity is offered by the H & L Tooth Co.

Mechanically forged to shape from high-nickel alloy steel, this point reportedly has great resistance to severe abrasion and is said to absorb exceptionally high impact.

The 40-L has the firm's Flexpin connection for securing the point to the adapter.

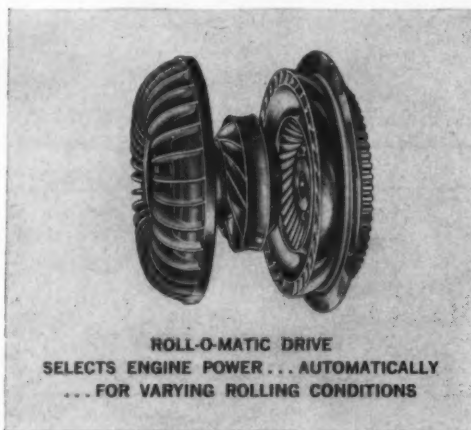


For further information write to the H & L Tooth Co., Dept. C&E, 1340 S. Greenwood Ave., Montebello, Calif., or use the Request Card at page 18. Circle No. 7.

You'll roll more surface every hour with GALION ROLL-O-MATICS

Proper driving power is applied automatically as needed.

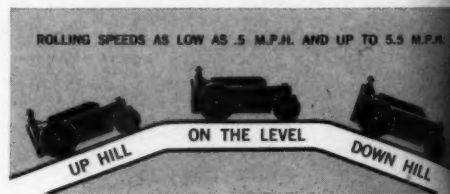
THIS GALION ROLLER won't falter on any terrain. It's equipped with Roll-O-Matic Drive—a highly efficient combination of torque converter, tail-shaft governor and two-speed transmission.



ROLL-O-MATIC DRIVE is standard on Galion rollers so every user benefits by getting...

- AUTOMATIC MULTIPLICATION OF TORQUE. It absorbs the build-up of roller inertia and provides smooth forward-and-reverse action.

- AUTOMATIC APPLICATION OF POWER. It provides an infinite number of drive ratios for speeds in either direction, up grades and down.
- AUTOMATIC REGULATION OF ROLLING SPEED. It allows roller engine to speed up or slow down without stalling or overloading.



For every compaction and finishing job there's a Galion Roll-O-Matic that's just right for you. Sizes: The world's broadest range of variable weights from 3 to 20 tons. Ask for latest catalog data. The Galion Iron Works & Mfg. Company, U.S.A.

RENT A GALION ROLLER—Keep on schedule—increase profit—without tying up working capital. Ask about the Galion Rent-A-Roller Plan.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.



General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIRON, Galion, Ohio

For more facts, use Request Card at page 18 and circle No. 347

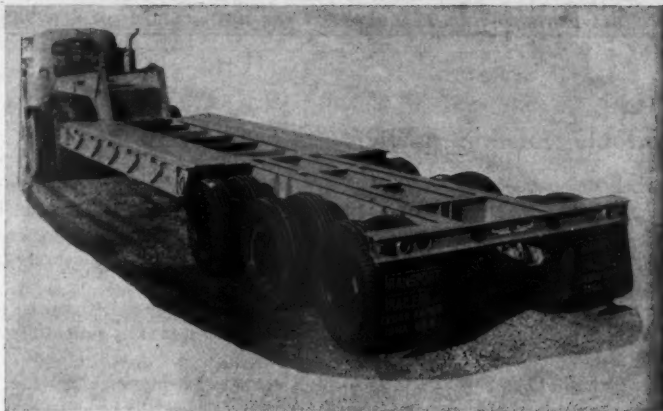
New paving compound bonds in wet weather

Pavex, a new bituminous patching and paving compound said to adhere readily to asphalt, concrete, and other paving surfaces even when applied outside in rain or freezing weather, is offered by Paramount Industrial Products Co.

It sets by compression and is ready for heavy traffic immediately, according to the manufacturer. Pavex needs

no special surface preparation—no primer is required—and it reportedly can be stored indefinitely without adverse effect.

For further information write to the Paramount Industrial Products Co., Dept. C&E, 2717 E. 75th St., Cleveland 4, Ohio, or use the Request Card that is bound in at page 18. Circle No. 113.



One of Transport Trailers' new line, this 40-ton-capacity triple-axle trailer weighs 11,800 pounds.

Low-bed trailers feature T-1 steel construction

A line of lightweight low-bed trailers using high-strength T-1 steel or equivalent, has been announced by Transport Trailers, Inc.

These units range up in capacity from 30 tons and are available with tandem and triple-axle running-gear assemblies.

For further information write to Transport Trailers, Inc., Dept. C&E, P. O. Box 968, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 121.

Premolded sealer for concrete joints

Sealfastic, a premolded concrete joint sealer, is announced by the National Expansion Joint Co.

Thoroughly waterproof, Sealfastic has 100 per cent expansion recovery up to 1 inch, according to the manufacturer. It may be used in joints as thin as 1/8 inch, straight or curved. There is no drip or spillage, so it may be placed exactly at any elevation in the joint.

Sealfastic is reported to last indefinitely; but, in case of damage, it may be replaced quickly with hand tools. It will not ignite and is fuel-resistant.

For further information write to the National Expansion Joint Co., Dept. C&E, 1601 Embarcadero St., Oakland, Calif., or use the Request Card at page 18. Circle No. 54.

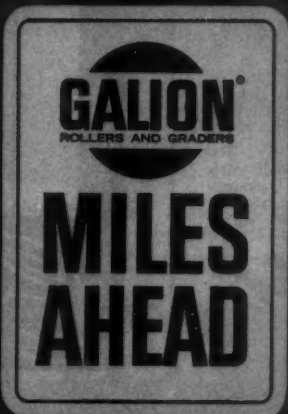
New additive reduces surface tension of water

A new liquid additive said to make the water used in concrete more effective is announced by the Deynor Corp.

Designated Multiwet No. 50, it reportedly reduces the surface tension of the mixing water almost as low as that of gasoline or alcohol. The cement and aggregates are instantly and completely wetted, and 3 1/2 to 4 per cent air entrainment results, according to the manufacturer.

Multiwet No. 50 is said to be ideal for winter operations since it is compatible with calcium chloride.

For further information write to the Deynor Corp., Dept. C&E, 1 Depot Plaza, Mamaroneck, N. Y., or use the Request Card at page 18. Circle No. 47.



Portable cement bins hold up to 645 barrels

The Construction Equipment Division of Clark Industries announces a line of completely portable ground-storage cement bins. These bins are rectangular, and are offered in capacities of 465, 555, and 645 barrels.

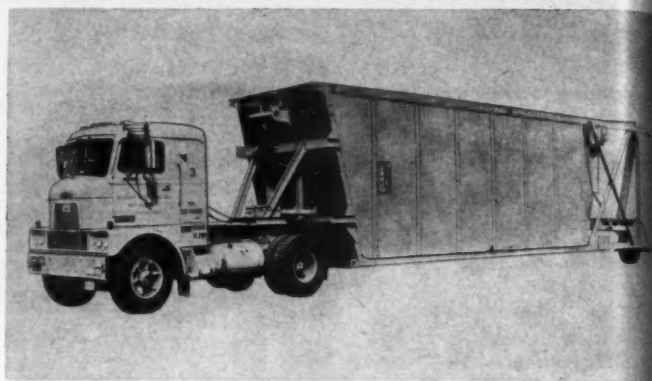
All models are built with a heavy-duty fifth wheel to fit any standard tractor and truck, and a complete rear-axle assembly with standard air brakes and 10 x 20.00, 12-ply truck tires. They are also equipped with stop lights, tail lights, etc.

Each unit is completely equipped

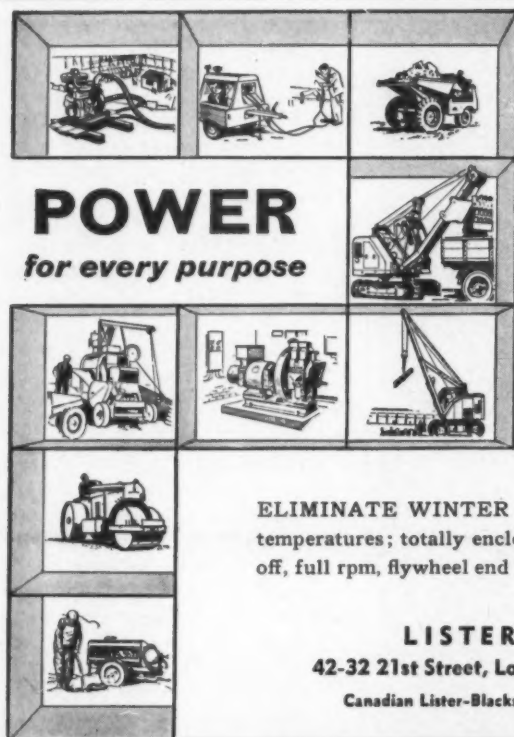
with all standard bin accessories, such as access hatch, inside ladder, emergency slide gate, bin-flow pads, discharge valve, and air-delivery intake unit.

These units reportedly can be installed in any existing cement batching setup.

For further information write to Clark Industries, Construction Equipment Division, Dept. C&E, 375 E. Fifth Ave., Columbus, Ohio, or use the Request Card at page 18 Circle No. 114.



Offered in capacities of 465, 555, and 645 barrels, the new Clark ground-storage cement bins are designed to be towed by any standard tractor or truck.



POWER
for every purpose

LISTER DIESEL ENGINES

Air-Cooled 1 1/2-72 HP
Water-Cooled to 90 HP

ELIMINATE WINTER WORRIES! Built-in cold starting for sub-zero temperatures; totally enclosed working parts. No "freeze-ups". Power take-off, full rpm, flywheel end or half speed gear end. Write for data and prices.

LISTER-BLACKSTONE, Inc.

42-32 21st Street, Long Island City 1, N. Y. STillwell 6-8202

Canadian Lister-Blackstone Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 348

Announce new lines of buckets, grapples

Little Giant Crane & Shovel, Inc. announces a new line of buckets and grapples.

Included are concrete, dragline, clamshell, and V-type dredging buckets. All are available for any of the five sizes of machines manufactured by the firm.

Buckets are light in weight yet sturdily built to withstand rough on-the-job usage.

For further information write to Little Giant Crane & Shovel, Inc., Dept. C&E, E. 16th and Howard Drive, Des Moines 13, Iowa, or use the card at page 18. Circle No. 32.

Retractable axle hikes tractor load capacity

Clement-Braswell, Inc., announces a retractable axle that converts single-axle tractors into tandem units for increased highway payloads.

Designed to fit on any standard single-axle tractor, the new unit can



NEW fully-hydraulic TEALE "200" CRANE LIFTS MORE with LESS CRANE WEIGHT!

If you want MORE WEIGHT IN TRUCK PAYLOAD . . . less in crane (without capacity loss) . . . the tough, high-performance TEALE "200" fits your needs! Constructed of T-1 and COR-TEN steel wherever advantageous . . . weight is kept low, and performance high! With a STANDARD 16' BOOM (Crane weight—2300 lbs.) . . . the "200" lifts from 3,750 lbs. (at 8') to 2,500 lbs. (at 16')! It works in a full 360° circle . . . allows 66' of hydraulically controlled free-line take-up! It comes equipped with dual controls (a complete panel on each side of truck), and hydraulically extendible outriggers!

It is also available with an HYDRAULICALLY TELESCOPING BOOM (crane weight, 2,700 lbs.) that can be extended or retracted from 16' to 28' under full load! At full 28' extension, it still handles a full 1,200 lbs. with ease and safety! Vertical reach with this boom is 35 ft.!

TEALE "200" fits any truck with curb weight of 5,500 lbs. and up . . . mounts in just 17" of space behind the cab . . . is especially ideal for those with single axles!

WRITE TO—

Teale
AND COMPANY
P.O. Box 308, Omaha, Neb.

For TOP "CRANE" POWER plus FULL TRUCK PAYLOAD . . . It's a

Other TEALE CRANES available with capacities from 400 to 7000 lbs.

For more facts, use Request Card at page 18 and circle No. 349

Save Time, Lumber, Money!

WITH Ellis Head Clamps



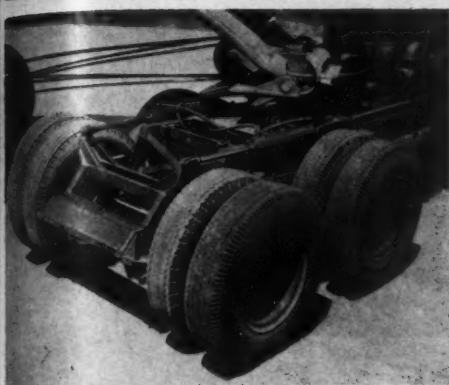
Shoring for suspended reinforced concrete construction can be erected faster, by fewer men, using less lumber, at lowest cost with ELLIS METHODS. An Ellis Head Clamp used on a head eliminates about 25 nails, 6 saw cuts, and spoiling 6 or 7 lineal feet of 1 x 4's or 1 x 6's. Take advantage of this saving!

Write Today for Details

Ellis MFG. CO.
INCORPORATED
211 N. W. 4th St. OKLAHOMA CITY, OKLA.

For more facts, use Request Card at page 18 and circle No. 350

CONTRACTORS AND ENGINEERS



A complete, fully loaded bearing axle, the Clement-Braswell unit is mounted so that it distributes the load properly upon the existing tractor frame.

be installed in a few hours by regular shop personnel. Air-lift cylinders pick the retractable axle up off the road when the unit is lightly loaded or on an empty return run, reducing tire wear.

For further information write to Clement-Braswell, Inc., Dept. C&E, P. O. Box 807, Minden, La., or use the Request Card at page 18. Circle No. 45.

Protective compound for concrete surfaces

The Steelcote Mfg. Co. announces a new polyamid-cured epoxy compound for patching, repairing, and resurfacing concrete surfaces.

This process reportedly results in a high degree of adhesion, plus protection against action of acids, both organic and inorganic, and alkalis. It is said to produce a tough, resilient overcoating that does not crack or chip under impact, is nonshrinking, and resists the action of water and corrosion.

For further information write to the Steelcote Mfg. Co., Dept. C&E, 3418 Gratiot St., St. Louis, Mo., or use the Request Card at page 18. Circle No. 61.

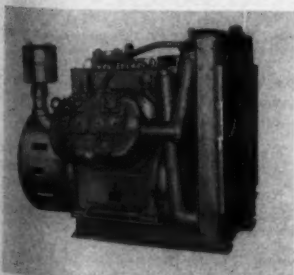
250-hp air compressor develops to 125 psi

New power and new size are offered in the Model WFO air compressor introduced by the Gardner-Denver Co.

This 250-hp unit operates at 1,160 rpm with a piston displacement of 1,305 cfm, at maximum pressure of 125 psi.

The WFO water-cooled 2-stage compressor has aluminum pistons and high-speed valves. Complete compressors are available with Super V-belt drive and built-in or direct-connected motor.

For further information write to the Gardner-Denver Co., Dept. C&E, 8. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 46.



For more facts, use Request Card at page 18 and circle No. 352

Winslow

TRUCK SCALES
PIT AND PITLESS TYPES

Capacities: 15, 18, 20, 30, 40, 50, 60 and 70 tons.

For use at temporary and permanent locations, stockpiles, and by bituminous material contractors at the jobsite.

Write or phone
Dept. B-70 today
Phone North 1231



TYPE CS — PITLESS — PORTABLE

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.
25TH & HAYTHORNE
TERRE HAUTE, IND.

For more facts, use Request Card at page 18 and circle No. 351

Important NEW features of the

JACKSON

AMERICA'S MOST POPULAR
MULTIPLE-SHOE
VIBRATORY COMPACTOR



Changing from the 13 ft., 3 inch working width to 88 inches overall for road travel or maneuverability on the job is accomplished hydraulically in just 30 SECONDS.



The new widening attachment (optional at added cost) is raised or lowered instantly. Makes the JACKSON by far the most efficient compactor for widening projects.

1. The 2 outer compactor units at each side of the workhead can be hydraulically raised to a vertical position for road travel or maneuverability around other equipment in just 30 SECONDS. Compare this with the time consuming job required on other equipment.

2. The new widening attachment can be instantly lifted or lowered when entering or leaving the area to be compacted.

With these added features there is nothing in its category that matches the JACKSON. 4200 3-TON BLOWS PER MINUTE from each of the compactor units provide extremely high productivity. 100% of specified density is frequently attained in one pass. And the Jackson does not leave the top 1-inch of the lift in a loose condition . . . a very important consideration. It operates in either direction . . . no turning or deadheading required. It reduces downtime to a minimum. Maintenance and economy of operation are exceptionally low.

For the best, lowest-cost compacting investigate the JACKSON MULTIPLE COMPACTOR. For sale or rent at your Jackson distributor. Name and further details on request.

JACKSON VIBRATORS, INC.

LUDINGTON,

MICHIGAN

Curb and gutter paver for concrete, asphalt

Dotmar Industries, Inc., has designed its Speedmaster curb and gutter paver so that it will now pave curb and gutter with either portland-cement concrete or asphalt, with equal facility.

The machine can be used for curb and gutter, monolithic curb, gutter and sidewalk, sidewalk alone up to 6 feet wide, highway widening strip, and median strip. Reinforcing steel rods can be used with either type of

paving material.

Due to non-involvement in slump conditions, the paver can be run wide open, paving up to 9 linear feet per minute. Any contour of curb and gutter can be formed, states the manufacturer.

For further information write to Dotmar Industries, Inc., Dept. C&E, 502 Hanselman Bldg., Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 25.



A special feature of the Dotmar unit is that all material does not need to pass through a hopper on the machine. Thus, asphalt trucks can dump their loads and leave without delay.

Offer engine generators rated at 12,000 watts

New Winco balanced-power engine generators are announced by the Wincharger Corp., a subsidiary of the Zenith Radio Corp.

Powered by a Wisconsin VH4D air-cooled gasoline engine, these units are rated at 12,000 watts ac, are



Rated at 12,000 watts ac, the Winco unit is powered by a Wisconsin air-cooled gasoline engine.

equipped for remote starting, and are said to be capable of producing ample power and energy for a wide variety of standby and portable power needs.

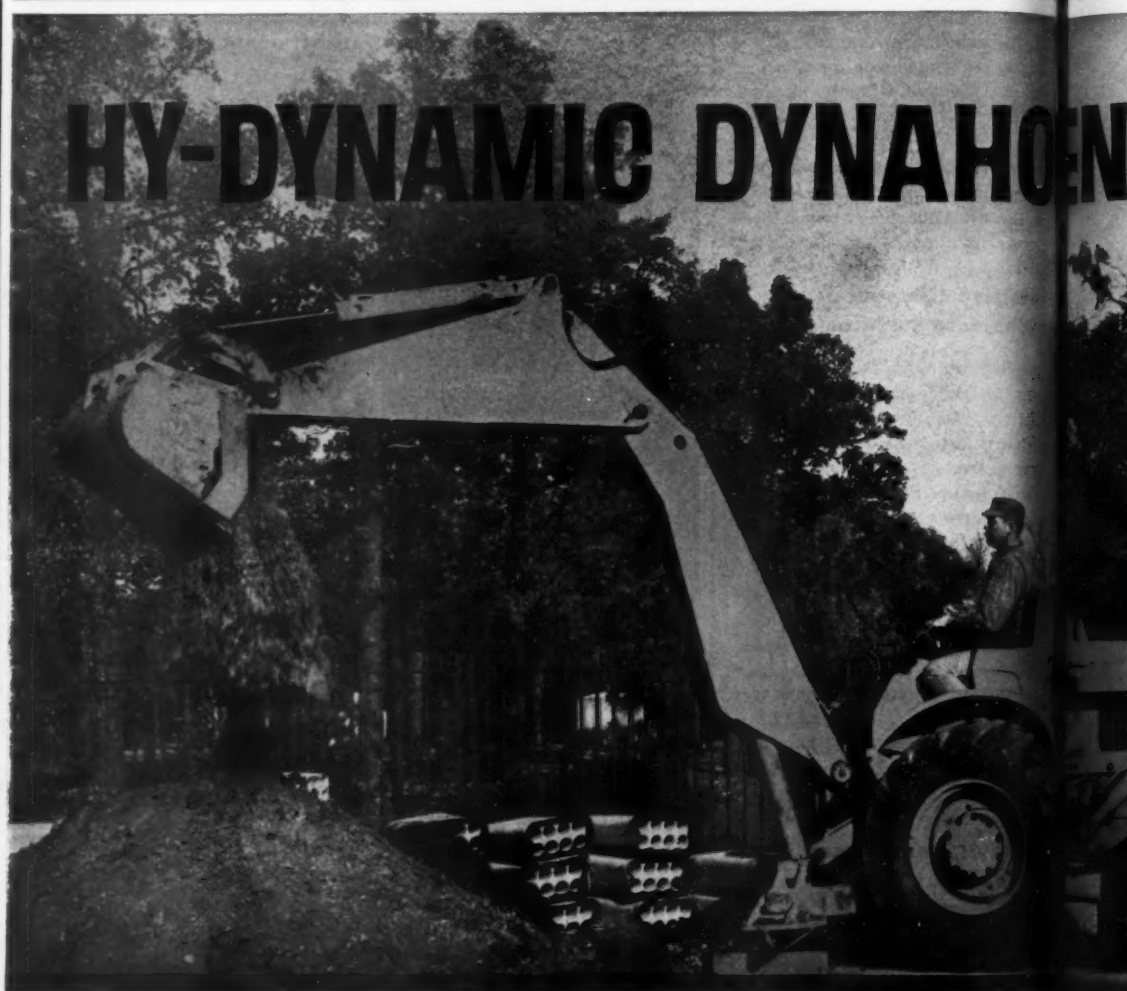
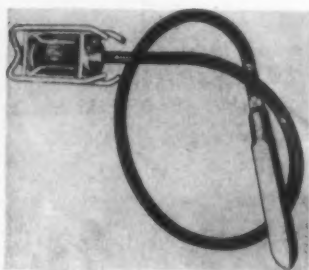
For further information write to the Wincharger Corp., a subsidiary of the Zenith Radio Corp., Dept. C&E, E. Seventh and Division Sts., Sioux City, Iowa, or use the Request Card at page 18. Circle No. 88.

Square-headed vibrator offered in three sizes

Wyzenbeek & Staff, Inc., offers a concrete vibrator with a square vibrating head.

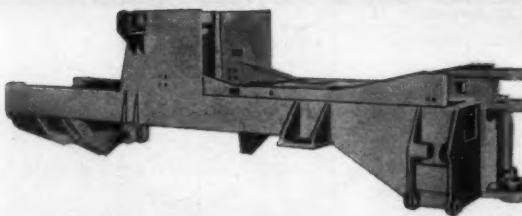
The new Wyco square-head unit, according to the company, produces a strong five-sided push in the concrete. This vibrator is available in $\frac{3}{4}$, 1, 1 $\frac{1}{2}$, and 1 $\frac{3}{4}$ -inch square sizes.

For further information write to Wyzenbeek & Staff, Inc., Dept. C&E, 223 N. California Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 91.



Massive Foundation Frame:

Only this design can provide the stamina and strength so vital to successful heavy duty trenching, loading and back filling performance.



Unit Construction: The complete Loader-Tractor-Backhoe is built as ONE INTEGRATED UNIT... differing completely from machines consisting of a standard tractor to which Loader and Backhoe attachments have been added.

New Operating Advantages: Extremely easy to handle... unusual visibility for both Backhoe and Loader operations. Operator's seat quickly pivots to either Loader or Backhoe controls.

Extremely Heavy-Duty Construction: All major component parts, such as frame, buckets, booms, dipper, etc., are exceedingly heavy and expertly welded structures.

Good Traction: Maximum tire flotation is provided in BOTH front and rear axles.

Oversize Pins: Every pin is oversize... for greatest strength and wear. All bushings are of special hard bronze compound... Zerk fitting lubricated.

Fast Swinging and Digging: Adequate hydraulic power guarantees especially fast Backhoe boom swinging and digging action.

Adequate Cooling: Oversize radiator, fan and hydraulic oil cooler prevent overheating under all conditions.

Exclusive Design: The only machine engineered as a completely integrated Loader-Tractor-Backhoe unit.

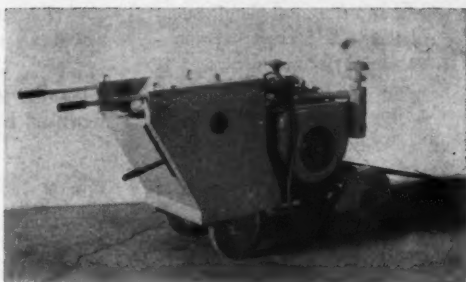
Power Steering: Easier to drive on the road and to operate in the field. Adequate weight on steering wheels for 18 to 20 mph highway travel.

Transmission: Torque converter and power shift forward and reverse provides easier, faster operation for all backfilling and loading jobs.

Longer Lasting Buckets: Oversize and extra heavy construction. Bucket teeth with replaceable caps on Backhoe.

Weight Distribution: The unit has been designed with proper weight distribution on both rear and steering axles to provide the best flotation, operating and best highway driving characteristics.

The Tri-Line's tricycle undercarriage provides easy maneuverability, and all controls are located within easy reach of the operator.



Self-propelled saw for cutting concrete

Engineered Equipment's self-propelled Tri-Line concrete-cutting saw has full hydraulic power for raising and lowering the cutting blade. The blade can be preset to proper cutting depth, and it returns automatically whenever the machine renews cutting operation.

Power is supplied by either a 2 or

4-cylinder air-cooled gasoline engine. Variable speeds are 0 to 25 fpm. A 30-gallon water tank is optional equipment.

For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 115.

New sludge-pump model lightweight, powerful

Chicago Pneumatic announces the Model CP-71 sludge pump, a lightweight scavenger designed to handle liquid containing up to 15 per cent solids.

According to the manufacturer, the new unit can eject 40 gpm at a 200-foot head, 100 gpm at a 50-foot head.

Operating on the ejector principle, the CP-71 handles rock-drill cuttings, sand, or other solids without causing rapid wear of internal parts. And since there are no diaphragms, stuffing boxes, rotors, impellers, and pistons to maintain, operation is said to be practically trouble-free.

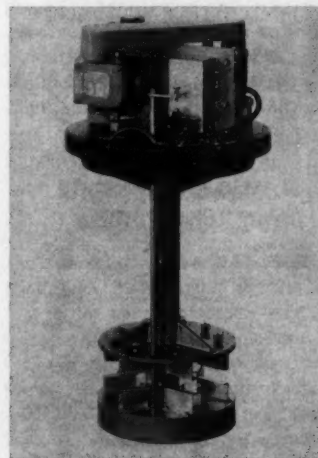
Designed to be used with or without a suction hose, the CP-71 operates on an 85-cfm compressor. It requires no priming.

For further information write to the Chicago Pneumatic Tool Co., Dept. C&E, 6 East 44th St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 29.

New apparatus announced for testing joint bonds

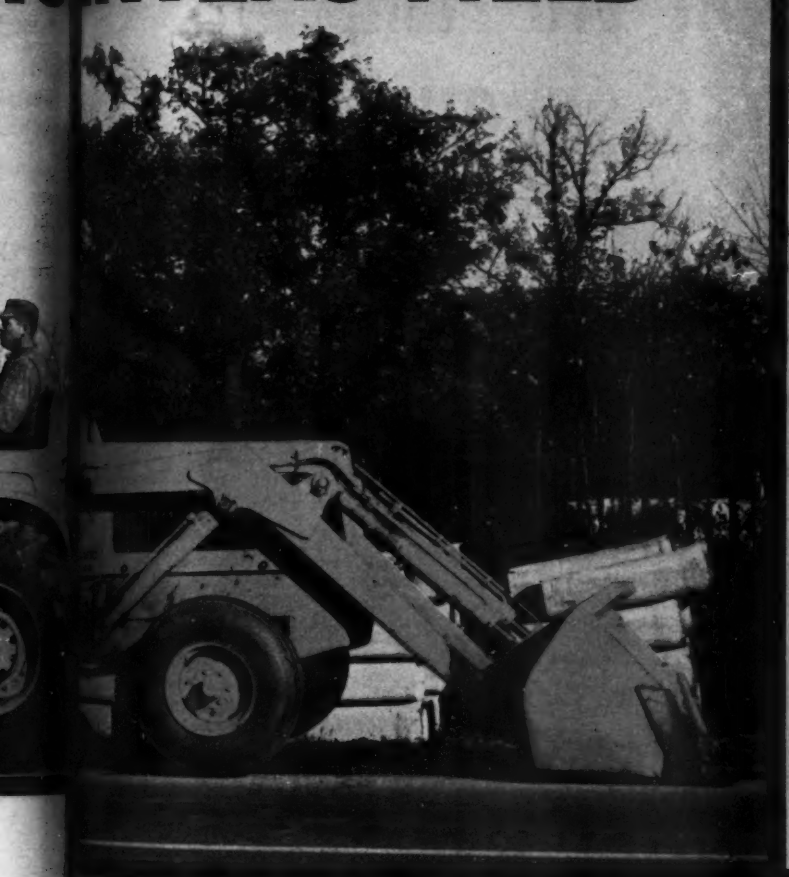
A new joint extension machine for testing the strength of bonds formed by concrete-pavement joint sealers is offered by Soiltest, Inc.

In the test, small cement mortar blocks 1 x 2 x 3 inches are bonded with the sealer. The operation of the testing machine simulates the expansion of a pavement joint. The machine may be run at temperatures as low as minus 20 degrees F.



For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the card at page 18. Circle No. 116.

HENTERS FIELD



"DYNAHOE" is Tremendous!

This new "backhoe-loader" has proved so completely different and better than anything we've ever seen that it's hard to believe. In six months of steady operation we have no problems whatsoever, have increased our output by 50%, find no job too tough to handle."

Emmett Lange, FOREMAN,
ILLINOIS HYDRAULIC CONSTRUCTION CO.
ELGIN, ILLINOIS

complete information on the New "DYNAHOE" write or call:



MANUFACTURED BY
THE HY-DYNAMIC CO.
413 SKOKIE HIGHWAY
LAKE BLUFF, ILLINOIS
CEDAR 4-5400



Engine—244 cu. in. Displacement, 65 HP @ 2400 RPM . . . Electrical System—12 volts . . . Fuel Capacity—18 gallons . . . Cooling System—30 quarts . . . Torque Converter—2 to 1 multiplication . . . Transmission—Power Shift Forward & Reverse, Manual Range—3 speed, to 20 m.p.h. in either direction . . . Axle Rear—Heavy Duty Planetary . . . Brake System—Hydraulic, individual on each rear wheel. Hand operated parking brake . . . Tires—Front 9:00 x 16—8 ply, Rear 14.9 x 24—8 ply . . . Hydraulics—Sealed System . . . 11 gal.—Steering . . . 31 gal.—Backhoe & Loader . . . Valves—6 spool for Backhoe, 2 spool for Loader, Relief Valve to control entire hydraulic circuit . . . Rams—All cylinders are double acting, except swing cylinders. Piston rods are extra heavy and chrome plated. Cylinder walls are extra heavy, honed, ground and polished. Extra heavy duty piston packing; extra long packing glands . . . Loader—Bucket 72"—1/4 yd. Struck, Lift—3,000 lbs. to full height, breakout force—ground level 6,000 lbs. . . Backhoe—Bucket—24" (std) 7.5 cu. ft., 18", 30" and 36" buckets available . . . Weight—Front 3,200 lbs. Rear 8,800 . . . Total 12,000

Specifications subject to change.

For more facts, use Request Card at page 18 and circle No. 353

Names in the News

M. Clare Miller, the newly elected president of The Associated General Contractors of America, Inc.



President and veep elected by AGC

The Associated General Contractors of America, Inc., Washington, D. C., has elected M. Clare Miller and Frank F. Burrows president and vice president, respectively.

Miller is president of the San Ore Construction Co., Inc., McPherson, Kans., which has built many airfields and highway projects.

Burrows is president and general manager of Williams & Burrows, Inc., Belmont, Calif., which is primarily engaged in building construction.



John J. Hassett, left, director of information for the Better Highways Information Foundation. At right, Arthur R. Trautmann, field coordinator for the highways organization.



BHIF appoints two

The Better Highways Information Foundation, Washington, D. C., has appointed John J. Hassett director of information and Arthur R. Trautmann field coordinator.

Hassett will be responsible for implementing BHIF's public-information program. He previously served with such organizations as the National Association of Plumbing Contractors, the Structural Clay Products Institute, and the American Gas Association.

Trautmann will help organize state "better roads" organizations and will serve as liaison with existing groups. He was previously field representative for the Associated Pennsylvania Constructors and the Pennsylvania Highway Information Association.

F. H. McGraw appoints Korean liaison officer

F. H. McGraw & Co., New York, N. Y., has named Rah, Jong Yoon liaison officer in Korea on a McGraw-Hydrocarbon plant-operations contract. His duties include expediting negotiations, government liaison work, personnel matters, and procedures. He has been with the construction combine since it began its operations in the Far East in 1954.

The joint venture recently completed a \$40 million fertilizer plant in Korea.

Asphalt Institute names new slate

The Asphalt Institute, College Park, Md., has elected L. P. Street, American Bitumuls & Asphalt Co., Baltimore, chairman of its board of directors.

New divisional vice presidents include: Atlantic-Gulf Division—A. R. Curtis, senior vice president, and R. C. Hawks, second vice president; Ohio Valley-Great Lakes Division—

J. W. McCracken, vice president, and S. J. Diegel, second vice president; Midwest Division—F. H. Brown, vice president, and R. S. Ketcham, second vice president; Southwest Division—A. T. Van Pelt, vice president, and E. F. Shannon, second vice president; Pacific Coast Division—George T. Goggin, vice president, and Roger M. Clark, second vice president.

L. B. Fox was appointed treasurer of the institute.

John M. Griffith, engineer of research, has been named director of research and development. He will be responsible for effecting closer working liaison with various state

highway research departments.

B. F. Kallas, former assistant engineer of research, is now research engineer. He will supervise laboratory activities.

Housing project manager named by New York firm

Joseph P. Blitz, Inc., construction firm of New York, N. Y., has appointed George Mittleman project manager for New York City Housing Authority projects.

Mittleman was formerly vice president of the Bonwit Construction Co., Inc.

PAVES QUALITY MAT AT 140 FPM, ELIMINATES SECOND FINISHER

Big Barber-Greene finishers on tracks and rubber acclaimed paving pacemakers by owners in South Carolina, West Virginia

Two new high-capacity Barber-Greene finishers—the SA-60 crawler-mounted machine and the pneumatic SB-60 model—are proving with unmatched high capacity high quality production that they deserve the title of paving pacemakers.

E. G. Shuler, General Superintendent for J. F. Cleckley & Co., Orangeburg, S. C., reports on the crawler-mounted SA-60 model:

"Our big SA-60 really cuts the mustard for us putting down high quality mat at 140 fpm for as long as we can keep trucks out in front. We averaged 90 fpm on one 11' paving job where we had binder courses of 1" and 2" and a 1" top course. We intended when we bought this model to eliminate a second finisher on our jobs, and the SA-60 does just that.

"We've owned Barber-Greene finishers since we started in the hot mix business back in 1950, but we've never had a machine that could handle the tonnage this model does. We've already put 65,000 tons through the machine this season with no maintenance problems. And our operators love it."

Pneumatic Model SB-60 praised

Acme Construction Co., Beckley, W. Va., prefers the same machine mounted on rubber tires—the

SB-60—for these reasons:

Supt., J. B. Bibb, "Our SB-60 Barber-Greene gives us higher laying and travel speed than ever gotten with any paver. It lays a level mat under the most adverse base conditions.

"Long runbacks used to mean shutting our plant for as much as 30 minutes—but not the SB-60 came on the scene. The SB-60 is back at speeds to 15 mph, so the plant keeps running and there's no build-up of trucks."

13 fast width changes

E. L. Spencer, operating foreman, adds, "On the present job, we hit 13 mat width changes in lineal feet. The ease with which we can extend normal laying width with the SB-60 is a big time saver. Also, the big power, traction, laying truck push-rollers and power steering breeze through this job over hilly terrain with grades and almost continual turns. We're satisfied."

Get full facts on both models from your Barber-Greene Distributor. Either the SA-60 or SB-60 give you highest capacity performance and the most of your plant, your truck fleet, and manpower.



RUBBER-TIRED BARBER-GREENE FINISHER is seen resurfacing 60 for Acme Construction Co., Beckley, W. Va. High capacity paver easily made 13 changes on a 1,500' job—eliminated 30 minutes shutdowns previously experienced.

These new rubber-tired crawler-mounted high capacity Barber-Greene finishers give unmatched asphalt paving performance through new laying features never before available on any finisher. Write for your new 24-page catalog.

Iowa Highway commission names bridge engineer

Charles Pestotnik has been named bridge engineer for the Iowa State Highway Commission, Ames, Iowa. He succeeds Nell Welden, who vacated the position January 1.

UET elects new slate

Willis F. Thompson has been elected president of United Engineering Trustees, Inc., New York, N. Y., an organization of five major national engineering societies.

Thompson succeeds Andrew Flet-

cher, with whom he is exchanging posts. Fletcher will become chairman of the UET Real Estate Committee, succeeding Thompson.

Also elected were vice presidents James F. Fairman and L. C. Kemp, Jr., and two new trustees—Michael L. Haider and William H. Wisely, executive secretary of the American Society of Civil Engineers.

Immerman, Brown given Moles awards for 1961

Harry T. Immerman and Herman Brown received the annual awards given by The Moles for "outstanding



Harry T. Immerman, vice president and chief engineer of Spencer, White, & Prentiss, Inc., member winner of the 1961 Moles award for outstanding achievement in construction.

achievement in construction" at the annual Moles' Award dinner in New York City last month.

The award is made to one member of the society and to one non-member.

Immerman, the member winner, is

vice president and chief engineer of Spencer, White & Prentiss, Inc., New York City construction firm. Prior to joining that company, he was chief engineer for the building of Lewisohn Stadium at the City College of New York, and designed and supervised installation of the first all-steel subway decking system in New York. He has several times given testimony for the city of New York on foundation, underpinning, and shoring problems, and has served as consultant to various industrial organizations.



Herman Brown, president of Brown & Root, Inc., non-member winner of the annual Moles award for outstanding achievement in construction.

Brown is president of Brown & Root, Inc., a Houston construction firm, and has organized associate companies in the fields of engineering, marine operations, securities, railway equipment, and gravel. The firm has been responsible for a total of more than \$2,150,000,000 worth of construction projects.

AISC elects new officers

James M. Straub was elected president of the American Institute of Steel Construction, New York, N. Y., at its 38th annual convention. Straub, who is president of Fort Pitt Bridge Works, Pittsburgh, was previously first vice president of the institute.

Other AISC officers elected were: Harold G. Lewis, first vice president; M. Harvey Smedley, secretary; and Erwin P. Stupp, treasurer. L. Abbett Post and John K. Edmonds were re-elected to the respective positions of executive vice president and assistant executive vice president.



NEW CRAWLER-MOUNTED BARBER-GREENE FINISHER paves at 140 fpm for J. F. Cleckley & Co., Orangeburg, S. C. On 40,000-ton resurfacing job on U.S. 23 and U.S. 25 in

South Carolina, foreman and operator called it "easiest handling finisher to come down the pike."



World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois, Detroit, Canada, England, Brazil, Australia



Choose from Barber-Greene's largest selection of continuous and batch-type mix plants to complete the profitable paving package available.

ROLLERS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 354

SPEEDY DELIVERY OF ECONOMY FORMS



30 offices and 8 warehouses throughout the nation, assure prompt service and speedy delivery anywhere in the U. S. Save time, materials, money, by renting Economy Steel Forms for concrete construction. Supplied with supervisory service—form erection drawings.

EFCO ECONOMY FORMS

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Box 128-E, H. P. Station
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Please send catalog on Economy Steel Forms, and address of nearest sales office.

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Firm Name _____
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City _____ State _____

For more facts, use coupon or circle No. 353

Product Literature

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Portable batcher—a brochure on C. S. Johnson Co.'s highly portable Rover batcher. Illustrates and describes how the machine, which has a capacity of 100 to 120 cubic yards per hour, can be transported over the road without special permits and set up in less than 2 hours.

Write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 51.

Chain slings, links, hooks—an illustrated brochure giving the specifications and working-load limits for the Jones & Laughlin line of alloy chain slings, rings, links, and hooks. Also presents the design advantages of Jallink, the company's permanent,

temperproof alloy chain-connector link.

Write to the Jones & Laughlin Steel Corp., Wire Rope Division, Dept. C&E, Muncy, Pa., or use the Request Card at page 18. Circle No. 27.

Friction material—an 80-page catalog listing American Brake Shoe Co. friction materials for power shovels, hoists, graders, dozers, and other machinery. Organic and sintered metallic materials included for every type of clutch and brake application. Manufacturers' index for quick location of proper specifications for parts on equipment of all makes. Cross-indexed by brake-lining size. Glossary of equipment technical terms and ordering information.

Write to the American Brake Shoe Co., Dept. A, Dept. C&E, 530 Fifth Ave., New York 36, N. Y., or use the Request Card at page 18. Circle No. 34.

Flotation tires—a booklet discussing the benefits of flotation tires for heavy trucks and construction machinery. Special section describes new flotation tire suitable for on or off-the-highway use. Eleven types of construction machinery suitable for conversion to flotation tires are listed, along with recommended conversion sizes and tire loadings. Drawings and photographs.

Write to the Harmo Tire & Rubber Co., Dept. C&E, 1800 W. Fort St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 76.

Crawler tractors—a brochure on the Allis-Chalmers Models H-3 and HD-3 crawler tractors. Includes illustrated information covering design and construction features of these compact crawlers, along with data on their gasoline or diesel power plants. General specifications furnished. Data on matched equipment. Catalog UT-130.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 78.

Bolt-tension calibrator—literature on the Skidmore-Wilhelm bolt-tension calibrator. Includes a set of operating instructions and a chart outlining an approved procedure for the installation of high-tensile bolts. Bulletin 110.

Write to the Skidmore-Wilhelm Mfg. Co., Dept. C&E, 442 Green Road, Cleveland 21, Ohio, or use the Request Card at page 18. Circle No. 120.

Crane-excavators—a bulletin covering the Schield Bantam Series 350 crane-excavators. Includes capacity charts and other specifications on the 11-ton carrier-mounted Model T-350, the 11-ton self-propelled Model CR-350, and the 8-ton Model C-350 crawler-mounted unit, as well as the complete line of front-end attachments. Bulletin No. 350.

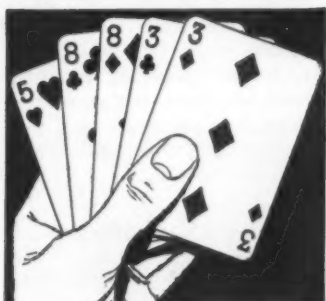
Write to the Schield Bantam Co., Dept. C&E, 219 Park St., Waverly, Iowa, or use the Request Card at page 18. Circle No. 55.

Drilling, sawing equipment—a folder illustrating and describing Felker equipment for the masonry and construction industries. Covers concrete saws, diamond blades, wet or dry abrasive blades, others. Form No. CDG-11026.

Write to the Felker Mfg. Co., Dept. C&E, 1128 Border Ave., Torrance, Calif., or use the Request Card at page 18. Circle No. 94.

Conveyor belt fasteners—a bulletin on Flexco hinged conveyor belt fasteners. Fully describes the newly designed Flexco 500X-250X combination fastener—a compression-type fastener that permits a thick belt (½ inch to 1½ inch) to be joined to a thinner belt (½ inch to 13/32 inch).

POKER? Play to win!



How would you play this hand?

You'll be the high hand before the draw about 3 times out of 5, but the odds are roughly 12 to 1 against helping on the draw. Odds are better than even somebody will beat you. Don't open. Don't call. Tough? Yes, but be patient...and win.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

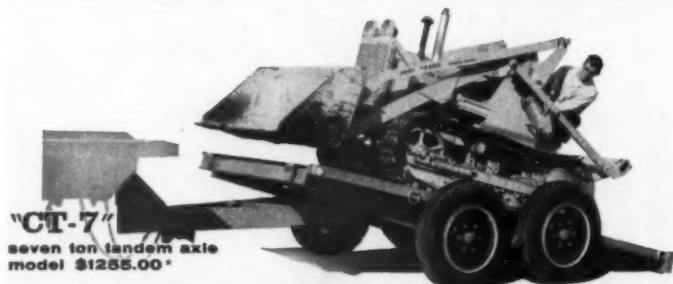
This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan



For more facts, circle No. 356



full tilt action

at nearly non-tilt prices!
(Requires No Skids!)

Why pay for a so called "bargain" trailer with slower, clumsy loading when you can get MILLER's full tilt action... first line, heavy ply tires, and all the other rugged MILLER quality features for just a few dollars more. In MILLER's lighter series Tilt-Tops, the choice of models shown here handle most of the rigs hauled by small job contractors and municipal department crews. And large contractors and county fleets save the cost of using more cumbersome trailers to shuttle lighter rigs from job-to-job. Don't jump at a "bargain"—see, compare these fast loading, low cost Tilt-Tops!



"H-4" four ton over-the-wheel platform
\$757.00* General purpose. Over-the-wheel design offers maximum platform area, 8' x 14', or 10' length or optional extra.

TEN MODELS
--from 4 to 22 tons

*F.O.B. Milwaukee, Wisconsin
Brakes and optional equipment extra.
*Plus 10% Federal Tax

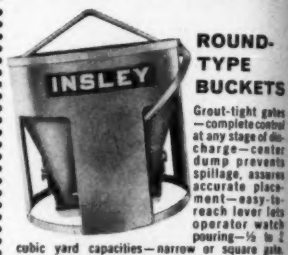
"C-4" four ton between-the-wheels platform
\$695.00* Extra loading angle and lower overall height on loaded equipment. Handles many of the large farm tractors.

Miller
Tilt-Top Trailer Inc.

456-F So. 92nd St., Milwaukee 14, Wis.

For more facts, use Request Card at page 18 and circle No. 357

INSLEY CONCRETE EQUIPMENT



ROUND-TYPE BUCKETS
Grout-tight gate—complete control at any stage of discharge—center dump prevents spillage, assures accurate placement—easy-to-reach lever lets operator watch pouring—½ to 1 cubic yard capacities—narrow or square gate



READMIX RECEIVING BUCKETS
Automatically balances itself when picked up—narrow radial gate for accurate placement—grout-tight gate—ideally suited for columns or exterior walls—½ to 3 cu. yd. capacities.



ROCKER DUMP HAND CARTS
Pneumatic tires and anti-friction bearings—operating gate—handles stiffer concrete—45° valley slope—slip sides with rounded corners—welded frame—30.7 to 61.2 cu. ft. capacities.



FLOOR HOPPERS
Compact—fast, easy operating gate—handles stiffer concrete—45° valley slope—slip sides with rounded corners—welded frame—30.7 to 61.2 cu. ft. capacities.

For dependability, for durability, count on Insley's many years of experience in manufacturing concrete equipment. See your Insley dealer or write direct to

INSLEY MANUFACTURING CORP.
P.O. Box 167 • Indianapolis 6, Indiana

For more facts, circle No. 358

CONTRACTORS AND ENGINEERS

with a common hinge pin. Fast installation technique. Flexco power tools, and the new No. 375 Flexco hinged fastener also covered. Bulletin No. HP-502.

Write to the Flexible Steel Lacing Co., Dept. C&E, 4607 Lexington St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 97.

Loader-tractor-backhoe—a brochure on the new, completely integrated Dynahoe loader-tractor-backhoe. Includes listings of special Dynahoe features, specifications, and dimensions.

Write to The Hy-Dynamic Co., Dept. C&E, Skokie Highway, Lake Bluff, Ill., or use the Request Card at page 18. Circle No. 72.

Towed paver—a bulletin describing construction and operating characteristics of the Miller Model MS-308-2 towed paving machine available with either standard or adjustable axle hitch. Close-ups of important components.

Write to the Miller Spreader Corp., Dept. C&E, 120 Pike St., Youngstown, Ohio, or use the Request Card at page 18. Circle No. 96.

Concrete joist construction—a 68-page manual discussing the benefits and design techniques of monolithic lightweight-concrete joist construction. Contains isometric details and cross-section drawings of all Ceco concrete joist construction with tabulated data for steel domes, flange forms, adjustable forms, and long forms. Profusely illustrated with detail drawings and on-the-job construction photos. Manual No. 4002-C.

Write to the Ceco Steel Products Corp., Dept. A. Dept. C&E, 5601 W. 26th St., Chicago 50, Ill., or use the Request Card at page 18. Circle No. 24.

Excavator-crane—a bulletin describing and illustrating the Davis Hydraxexcavator Models AH-5 and BR-5 one-man-operated excavator-crane. Action photos show both units at work. Close-ups of typical end attachments. Specifications.

Write to Davis Engineering, Inc., Dept. C&E, P. O. Box 127, Dowagiac, Mich., or use the Request Card at page 18. Circle No. 123.

Masonry cutting—a brochure on Eveready BrikSaw masonry saws and blades. Outlines the features of BrikSawMatics, BrikSaws, and portable BrikSaws. Also offers information on the firm's line of diamond, break-resistant, abrasive blades.

Write to the Eveready BrikSaw Co., Dept. C&E, 1104 Union Ave., Kansas City 1, Mo., or use the Request Card at page 18. Circle No. 53.

Curb-and-gutter machine—a brochure on the Smith-Field automatic curb-and-gutter machine designed to lay integral curb and gutter without forms. Photos include close-ups of machines and components, plus an on-the-job shot of a typical operation. Specifications furnished for Models Mark 111-A and 111-A-30.

Write to Power Curbers, Inc., Dept. C&E, P. O. Box 1465, Salisbury, N. C., or use the Request Card at page 18. Circle No. 86.

Moisture, density instrumentation—a brochure discussing nuclear gauges for rapid field determination of moisture and density in soils, aggregates, concrete, and asphalt. According to the literature, the nuclear moisture and density probes may be used on the surface of the material being tested, or they may be inserted into bore holes through access tubing to measure the moisture or density at selected depths to 200 feet below the surface. Profusely illustrated; full specifications.

Write to the Nuclear-Chicago Corp., Dept. C&E, 359 E. Howard Ave., at Nuclear Drive, Des Plaines, Ill., or use the Request Card at page 18. Circle No. 73.

Compressor—a bulletin describing the Ingersoll-Rand line of Gyro-Flo compressors for general utility applications. Covers in detail power-takeoff, truck-mounted, and wheeled units. Form 2938.

Write to the Ingersoll-Rand Co., Dept. C&E, Phillipsburg, N. J., or use the Request Card at page 18. Circle No. 35.

Equipment leasing—a brochure entitled "Equipment Leasing Facts." Discusses leasing terms for construction machinery.

Write to the A. J. Armstrong Co., Inc., Dept. C&E, 60 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 50.

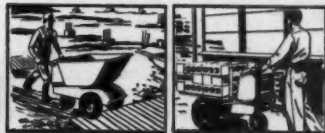
(Continued on next page)



PRIME-MOVER

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Thousands of M-158 Prime-Movers are in use tripling construction laborers' production. Places 12 to 17 cu. yds. of concrete per hour without extensive preparation. Runs on the same type ramps, hoists and runways as hand carts. 10 cu. ft. bucket and flatbed, interchangeable. Write for proof of production performance. Prime-Mover Co., Muscatine, Iowa.



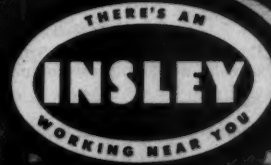
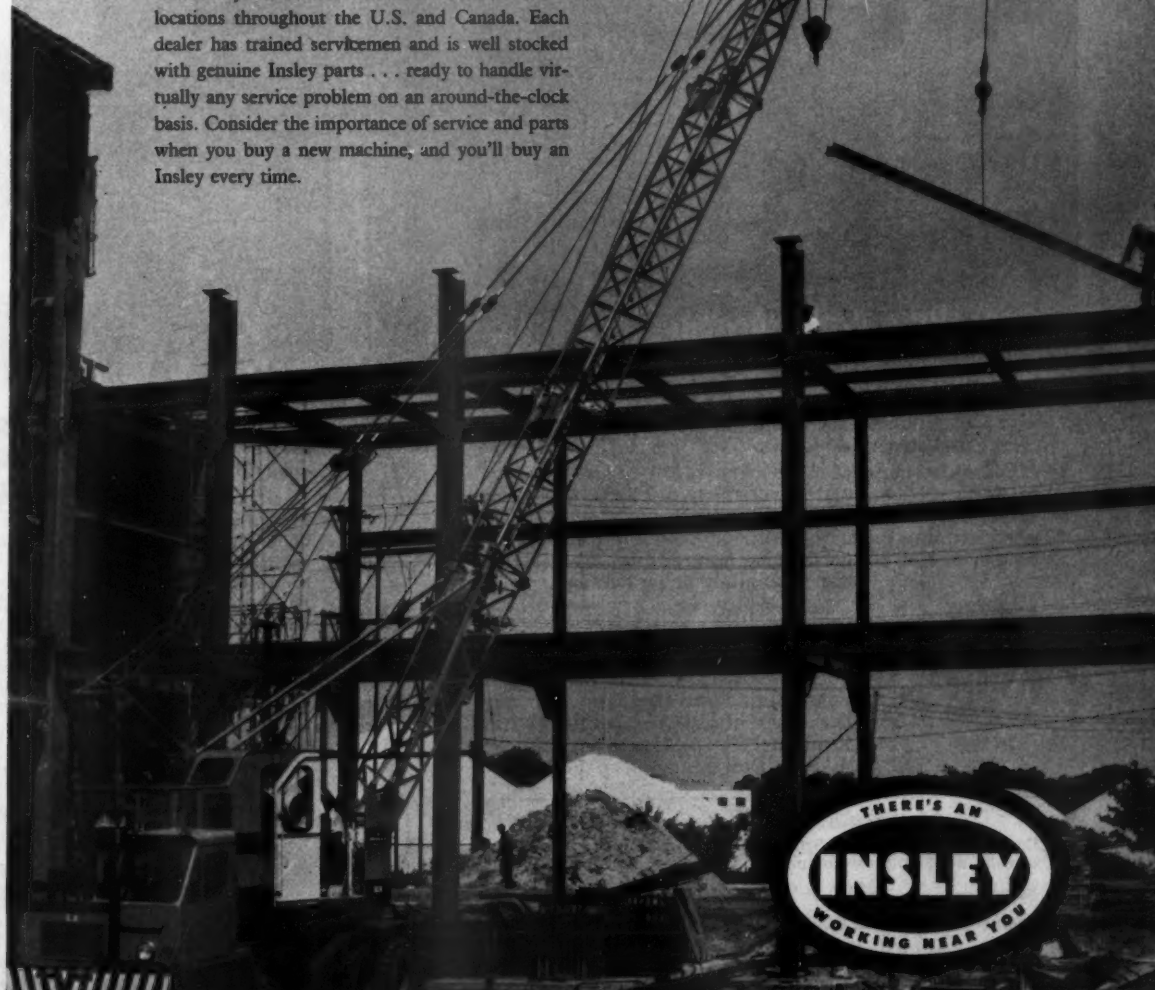
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An INSLEY gives the best SERVICE

The operator of this 20-Ton Insley "M" is spotting steel fast and with exacting accuracy—thanks to a positive, smooth-working combination of independent boom hoist and power load lowering. The independent boom hoist (power up and power down), operating through planetary gears, is the key to precision boom raising and lowering. With power load lowering, the load is lowered under power for full control all the way up and all the way down. These are just a few of the Insley "plus" features. Get the full story from your Insley dealer.

... gets the best service, too!

The Insley service network includes over 100 dealer locations throughout the U.S. and Canada. Each dealer has trained servicemen and is well stocked with genuine Insley parts... ready to handle virtually any service problem on an around-the-clock basis. Consider the importance of service and parts when you buy a new machine, and you'll buy an Insley every time.



INSLEY MANUFACTURING CORPORATION
P.O. Box 167 • Indianapolis 6, Indiana

For more facts, use Request Card at page 18 and circle No. 360

Safety belts—an illustrated bulletin on Mine Safety Appliances' complete line of safety belts. Provides details on various types of web or leather belts, including body, harness, and suspension types. Information also given on lanyards, shock absorbers, and related equipment. Bulletin No. 1302-6.

Write to the Mine Safety Appliances Co., Dept. C&E, 201 N. Brad-dock Ave., Pittsburgh 8, Pa., or use the Request Card at page 18. Circle No. 42.

Soil-erosion control—a brochure describing Ultracheck glass-fiber blankets for soil-erosion control. Photographs and drawings illustrate a wide range of applications. Also contains data on installation.

Write to the Gustin-Bacon Mfg. Co., Dept. C&E, 210 W. 10th St., Kansas City, Mo., or use the Request Card at page 18. Circle No. 71.

Tractor-scraper—engineering and design details on the Caterpillar 619B-442 tractor-scraper team. Power, speed, safety and roadability, easy servicing, and loading characteristics discussed in detail. Booklet No. 619B.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 56.

Rubber belts, hose, others—a new and completely revised general catalog describing the Raybestos-Manhattan line of rubber products for industry. Includes sections on Poly-V drive, V-belts, transmission belt, and conveyor belt, as well as all types of hose, flexible rubber pipe and expansion joints, plus a summary of molded and extruded products. Basic specifications and information on ordering. Catalog M5.

Write to the Manhattan Rubber

Division, Raybestos-Manhattan, Inc., Dept. C&E, 61 Willett St., Passaic, N. J., or use the Request Card at page 18. Circle No. 100.

Expansion-joint materials—a brochure describing Carey Elastite materials for asphalt and fiber expansion joints. Also discusses Carey-lastic joint-sealing compounds for highway and airport uses, as well as the Elastibord vapor stop for use under concrete slabs. Text illustrated with sketches and photographs. Form No. 6481.

Write to The Philip Carey Mfg. Co., Dept. C&E, 320 Wayne Ave., Lockland 15, Ohio, or use the Request Card at page 18. Circle No. 3.

Light-duty trencher—literature illustrating and describing the Stampings Pow-R-Spade trencher designed to dig a 3-inch-wide trench from 1 to 24 inches deep, at a 4-inch-wide

trench to a depth of 18 inches. Operated by one man from start to finish, the unit reportedly digs at speeds from 1½ to 17 fpm, depending upon soil conditions. Specifications given.

Write to Stampings, Inc., Dept. C&E, 321 24th St., Rock Island, Ill., or use the card at page 18. Circle No. 11.


Lightweight transmission—a bulletin describing Clark Equipment's Model 610-ED 515-pound aluminum 9-speed transmission. Illustrated with photographs, chart, cutaway drawing, and graph. Specifications furnished. Bulletin 610-ED.

Write to the Clark Equipment Co., Transmission Division, Dept. C&E, Jackson, Mich., or use the Request Card at page 18. Circle No. 38.

Drilling unit holder—literature describing the portable Vac-U-Hold for diamond bit drilling. A vacuum pump provides adequate suction for

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STRUCTURAL PLATE

SYRO



Pipe · Pipe Arch · Arches · Underpasses

The Syro Steel Company, a long established manufacturer of highway products, NOW offers a complete line of sectional corrugated structures for heavy-duty drainage requirements. ...Years of experience in the manufacture of highway products result in sectional plate structures designed for easier, cost-saving field erection. The wide range of available gauges and sizes permits economical selection for any fill height and loading condition. Hot dip galvanizing assures long life...structures last indefinitely under average conditions.

For economy, strength and permanence in drainage structures...choose Syro Structural Plate.

(Syro Structural Plate meets specifications of all State Highway Departments, U.S. Corps of Engineers, Bureau of Public Roads and all other specifications based on AASHTO Designation M167-57.)



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Complete information on Syro Structural Plate is available. Phone, wire or write the Syro Steel Company.

Name

Company

Address

City Zone State

For more facts, use coupon or Request Card at page 18 and circle No. 361

Announcing

HI-VIBER

Hi-cycle motor-in-head concrete vibrator



Dependable gasoline engine generator plant

180-cycle 230-volt 10,500 rpm motor—right at the working end!

Every feature you've looked for is built into this newest Viber vibrator: brute power, high speed, one-man operation, easy maintenance. Hi-Viber consolidates the lowest slump concrete—with power to spare! It's easy to handle on narrow scaffolds, high forms or at hard-to-reach pour sites—as far as 200 feet from the generator. Simple motor design eliminates downtime and job failure. Just two moving parts—the rotor and the massive eccentric weight—turn on lifetime-lubricated sealed bearings. 1½ or 2½-inch diameter vibrator heads have interchangeable rubber or steel tips. For complete details, call your Viber distributor or write the Viber Company, 726 South Flower Street, Burbank 24, California.

VIBER LINE: Concrete Vibrators, electric, pneumatic and gasoline engine powered • Hi-cycle, Motor-in-head vibrators • Small diameter internal vibrators (electric or gasoline) • Laboratory electric internal • Mass concrete vibrators (pneumatic) • External vibrators (electric and pneumatic) • Full depth concrete paving vibrators

it pays to standardize on

Viber Vibrators

Pioneers and leaders in the manufacture of vibrators

For more facts, use Request Card at page 18 and circle No. 362

CONTRACTORS AND ENGINEERS

inches. Open start to finish. Also gives information on four Vac-U-Rig-mounted Dymodril models. Catalog No. 4110. Write to the Milwaukee Electric Tool Corp., Dept. C&E, 5316 W. State St., Milwaukee 8, Wis., or use the Request Card at page 18. Circle No. 95.

Prestressed concrete—a bulletin describing the wide range of applications for high-quality prestressed concrete in 16 studies of outstanding prestressed-concrete projects. A prestressed lift slab, 120-foot-long prestressed bridge girders, and a 2-million-gallon prestressed water tank are some of the projects covered. Emphasizes role played by Pozzolith. Bulletin MBR-P-13. Write to The Master Builders Co., Dept. C&E, 2490 Lee Blvd., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 85.

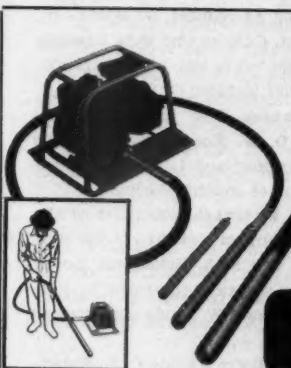
Hydrocyclone classification—a bulletin describing the Wemco ready-to-install hydrocyclone-system package called the Pump-Sand-Clone. General specifications of the unit are given, as well as application data on dewatering, recovery of fine fractions, sand desliming, and sand classification. Bulletin C5-B3. Write to Wemco, division of Western Machinery Co., Dept. C&E, 650 Fifth St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 21.

Spreaders—literature on the Baughman spreader, a compact pull-type spreader for snow and ice control with a capacity of 2,000 pounds of 60-pounds-per-cubic-foot material. Drawings illustrate major construction features. General specifications included. Bulletin A-453. Write to the Baughman Mfg. Co., Inc., Dept. C&E, 192 Arch St., Jerseyville, Ill., or use the Request Card at page 18. Circle No. 57.

Rotary compressors—a bulletin describing the complete Davey line of 125-cfm rotary compressors. Includes 18 illustrations of important compressor design features and an explanation of operating principles. Compressors are available in skid-mounted utility models and as 2-wheel trailers; choice of gasoline or diesel engines. Form E-268. Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 80.

Underwater cement—literature describing Speed-Crete underwater and all-purpose bonding cement. According to the manufacturer, Speed-Crete is a quick-setting, high-strength grout that can be applied easily and quickly by hand, by spray method, or by pump without the use of forms. Write to Speed-Crete of La., Inc., Dept. C&E, 3631 Airline Highway, Metairie, La., or use the Request Card at page 18. Circle No. 87.

Sheepsfoot rollers—a fact sheet illustrating and describing Thunderbird sheepsfoot rollers, which come in three sizes—42 x 48, 60 x 48, and 60 x 60 inches. Lists such features as extra weight, longer life, lower maintenance. Specifications furnished. Bulletin SF-1-60. Write to Thunderbird Engineering, Inc., Dept. C&E, 2811 Dawson Road, Tulsa 9, Okla., or use the Request Card at page 18. Circle No. 122.



Prime-Mover Concrete Vibrator

Designed on the proven rolling-weight principle that:

1. Produces high frequency powerful vibrations
2. Permits the shaft to run cool and slow
3. Provides one hand portability
4. Changes from small to large heads quickly
5. Requires fewer parts — less maintenance
6. Gasoline or electric power units

Guaranteed by Prime-Mover Co. — recognized for dependability in concrete handling equipment. Write to us for distributor's name and a demonstration. Prime-Mover Co., Muscatine, Iowa.

PRIME-MOVER

For more facts, use Request Card at page 18 and circle No. 364



We put a lot of work into it
You get a lot of work out of it

quality inside and outside

Take a good look at the pictures. They show you where your savings really start — with the inner and outer uniformity of wires and strands. Unseen, but of utmost importance is the extra high strength of Roebbling Royal Blue Wire Rope. Quality —

inside and outside — is the extra working factor that pays off on the job for you. Find out more from your wire rope distributor, or write for free booklet to Roebbling's Wire Rope Division, Trenton 2, N. J.

ROEBBLING

Branch Offices in Principal Cities
John A. Roebbling's Sons Division
The Colorado Fuel and Iron Corp.

For more facts, use Request Card at page 18 and circle No. 365

NEW

Eco-FLARE
TRANSISTORIZED WARNING LIGHTS

**BARRICADES
& LIGHTS**



Eco manufactures the most complete line of flasher lights and barricades on the market. Our heavy duty barricades are designed for maximum economy of operation. Will not blow over. Rugged heavy-duty guard. Finished with baked-on implement enamel. Write today for free illustrated catalog.

ELECTRONIC SPECIALTIES CO.

BATAVIA 3, ILLINOIS

For more facts, circle No. 363

FEBRUARY, 1961

Manufacturer Memos

Edmund F. Buryan, president, Minneapolis-Moline Co.



Edmund F. Buryan has been elected president, chief executive officer, and member of the board of directors of Minneapolis-Moline Co., Hopkins, Minn.

Since 1957, Buryan has served as marketing vice president of the W. A. Sheaffer Pen Co.

James D. Moran, assistant to the president of The Flintkote Co.



James D. Moran has been appointed assistant to the president of The Flintkote Co., New York City building-products firm.

Moran is also an assistant vice president of the company, and vice president and general manager of The Sealit Co., a Flintkote subsidiary.

James A. Holloway is the new vice president in charge of sales for the Wheeling Corrugating Co., Wheeling, West Va., a wholly owned sales subsidiary of Wheeling Steel Corp.

He formerly was assistant general manager of sales for the Wheeling Steel Corp.

The new Oliver Corp. subsidiary of The White Motor Co., Chicago, Ill., is headed by Samuel W. White, Jr., president. Officers who were formerly executives with the old Oliver organization include:

B. Haugen, vice president of finance; D. W. Koegle, vice president of marketing; and L. P. Richie, vice president of manufacturing.

T. W. Kavanagh, controller of the old company, is treasurer of the subsidiary, and S. A. Baker has moved up from assistant controller to controller. Donald W. Alvin continues as secretary.

Other officers include C. E. Swing-

ley, assistant treasurer; G. R. Lanphere, assistant treasurer and assistant secretary; and John W. Dwyer, assistant controller.

Harvey A. Scribner and Donald V. Buttenheim are co-chairmen of the publicity and public relations committee for the 1963 Construction Equipment Exposition and Road show to be presented by the Construction Equipment Manufacturers Association at the International Amphitheatre in Chicago.

Scribner is president of Russell T. Gray, Inc., a Chicago industrial advertising agency. Buttenheim is president of CIMA and president of Buttenheim Publishing Corp., New York, N. Y.

The exhibit will be sponsored by the

American Road Builders' Association, the Associated General Contractors of America, the International Federation, and the Associated Equipment Distributors.

Four men have been promoted to the newly created positions of regional managers for Raymond Concrete Pipe Division of Raymond International, Inc., New York, N. Y.

J. P. Cummins will manage the eastern region, covering the Boston, New York, Philadelphia, and Washington districts from headquarters in New York. For two years he has been vice president of Raymond's domestic organization.

C. E. Simmons is central regional manager for the Detroit, Chicago, Pittsburgh, Kansas City, and St. Louis districts.



G-900 TRACDRILLS with "Hydra-poise" knee-action have unmatched maneuverability and stability to sink blast holes in any formation. Independently operated, extra-long crawlers provide 1350 square inches of ground contact. Two sets of grouped controls — one at turret, the other at boom end — save time and steps for driller.



THIS BATTERY of CP-600 "Power Vane" Rotary Compressors feeds air to a group of G-900 Tracdrills. They supply the "Go-Power" for the toughest jobs with portability and "hands-off" operation.

G-900 TRACDRILLS

PROVE THEIR POWER AND STAMINA IN THE TOUGHEST TERRAINS AND FORMATIONS... AND THEY CAN DELIVER MORE BLAST HOLES PER SHIFT FOR YOU!

**FOUNDATION
CONSTRUCTION**

CAISSONS

DRILLED AND
UNDERREAMED

PIERS

**SPECIAL
DRILLING
PROBLEMS**

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For more facts, circle No. 366

Association of Contractors and Associated Engineers. He has been elected assistant vice president and has set up offices in Detroit.

C. J. Van Horn is manager for the southern region, covering the Miami, Atlanta, New Orleans, and Houston districts from headquarters in Atlanta. He has also been elected assistant vice president.

C. E. Graff is manager of the western region, comprised of the San Francisco, Los Angeles, Portland, and Salt Lake City districts. He was elected assistant vice president last year and will operate from Raymond's Oakland office.

The board of directors of Worthington Corp., Harrison N. J., has named Walther H. Feldmann, president, chief executive officer. He suc-

ceeds Hobart C. Ramsey, chairman.

Robert E. Marshall has been elected treasurer of the company. He will also continue in the position of secretary and general counsel.

C. Robert Maranville has been elected assistant treasurer of the company.

New vice president and general manager of Thor Power Tool Co., Aurora, Ill., is Robert G. Flaverly, former vice president in charge of British operations for the company, and managing director of Armstrong Whitworth & Co., Ltd., Thor's manufacturing subsidiary at Newcastle-on-Tyne, England.

W. A. Nugent has left his post as executive vice president but will remain a director of the firm.

Frank G. Hough, who retired in 1957 after 35 years in the construction-equipment manufacturing industry, has returned to the field as president of The Hy-Dynamic Co., Lake Bluff, Ill.

The new company manufactures the Dynahoe, a heavy-duty tractor-backhoe-loader, which is a completely integrated unit. An important feature of the rig is its massive foundation frame, which provides the strength necessary for successful heavy-duty performance.

W. E. Galland has been appointed to the newly-created post of vice president and general sales manager of Midland Products Co., Mahwah, N. J.

Formerly, Galland was advertising

and sales promotion manager of the Wemco Division of Western Machinery Co., San Francisco.



Robert P. Straetz, vice president and sales manager of Homelite, a division at Textron.

Homelite, a division of Textron, Inc., Fort Chester, N. Y., has named Robert P. Straetz vice president and sales manager. He had been sales manager since 1956.

Straetz will take over some of the duties of Nelson Thompson, executive vice president, who plans to survey Homelite's foreign markets more extensively.

The board of directors of Bucyrus-Erie Co., South Milwaukee, Wis., has elected Eugene P. Berg and Ernest S. Everitt as new directors.

Berg joined the company in November as executive vice president. He was formerly general manager of the Chicago operations of the Link-Belt Speeder Corp.

Everitt is presently managing director of Ruston-Bucyrus Ltd., a British affiliate. He has been with Bucyrus-Erie since 1927.

The new vice president of facility planning and appropriations for United States Steel Corp., New York, N. Y., is Norman C. Michels.

Michels joined the company in 1941. For the past five years he has been vice president of engineering for U. S. Steel's Tennessee Coal & Iron Division.

A calendar of forthcoming conventions, of interest to our readers, appears on page 70 of this issue.



When you're stuck with treacherous footing and hard rock, you have a job for Chicago Pneumatic G-900 Tracdrills and "Power Vane" Rotaries. Operators find the new G-900 a driller's drill. It's got everything a driller expects from a high production rig... some real exclusives, too! It can drill directly alongside rocks with 180° full swing. It handles horizontals 11 feet high at the face, or snake holes at ground level. And you can't beat the G-900 for safety. Release the throttle and

heavy-duty brakes lock automatically... keep drill from shifting or creeping... hold hard on really bad ground.

If you back-up your G-900's with the rugged, always reliable CP-600 "Power Vane" Rotary Compressors that have the "Go-Power" to meet every air demand, you can lick the toughest formations you'll ever find. Write for Bulletin SP-3267 on the revolutionary G-900 Tracdrill to: Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, New York.



Chicago Pneumatic

RACDRILLS • AIR COMPRESSORS • PNEUMATIC TOOLS • AIR WRENCHES • REICHdrills

For more facts, use Request Card at page 18 and circle No. 367



KATOLIGHT PORTABLE POWER PLANTS give your crews "plug-in" electricity anywhere, whenever it is wanted. Here is handy dependable electric power to operate all types of power tools or to provide steady, bright floodlighting. Standard sizes and models for every portable, standby or continuous use from 350 watts to 125 KW. Special Units up to 750 KVA to meet specific requirements. Yes... with instant, dependable Katolight power on the job, work speeds up... costs go down.

WRITE TODAY FOR DETAILS!

KATOLIGHT CORPORATION
Box 891-8 Mankato, Minnesota

For more facts, circle No. 368

Distributor Doings

Buffalo-Springfield appoints distributors

Buffalo-Springfield Co., Springfield, Ohio, has appointed three new distributors for its line of compaction equipment, including 7 and 9-wheel pneumatic tired rollers, 2 and 3-axle tandem rollers, 3-wheel rollers, and the 4-wheel Kompactor.

Hodge & Hammond, Inc., 720 Garison Ave., New York, N. Y., will cover southeastern New York; Evans Engine & Equipment Co., Inc., 4300 11th Ave., Seattle, Wash., will handle Alaska and the eastern half of Washington, and Shelley Tractor & Equip-

ment Co., 7675 N.W. 12th St., Miami, Fla., will cover southern Florida. The firm has branches at 313 Margaret St., Key West and 1800 N.W. 23rd Ave., Ft. Lauderdale.

St. Louis distributor builds new facilities

Cummings, McGowan & West, Inc., St. Louis, Mo., jobbers and distributors of construction equipment, are building a new \$100,000 warehouse and office building.

The building, which will be constructed by Fischer & Frichtel of St. Louis, will be largely of concrete block

and will provide the firm with a total of 38,000 square feet of floor space. The front will feature colored panels of composition material. It is expected to be completed late this winter.

U. S. Rubber names

The United States Rubber Co., New York, N. Y., has named Diamond Supply Co., 7245 Harrisburg Blvd., Houston, Texas, a distributor of conveyor and elevator belting for its mechanical-goods division.

Kwik-Mix names dealer

Kwik-Mix Co., division of Koehring Co., Port Washington, Wis., has appointed Acme Equipment Co., 3030 N. Reynolds Road, Toledo, Ohio, a dis-

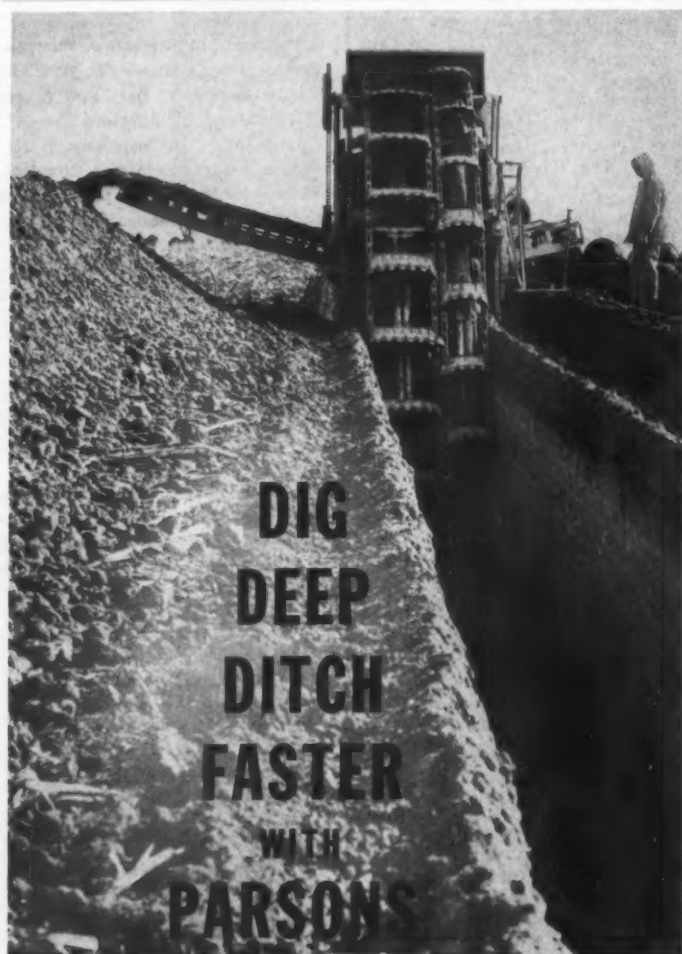
tributor for its material-handling products in 12 counties in northwestern Ohio and three counties in southeastern Michigan.

The new dealer will handle maintenance and service on the Motobug and the Hi-Lifter, a multi-attachment machine designed primarily for outdoor work.

Gorman-Rupp names

The Gorman-Rupp Co., Mansfield, Ohio, has appointed The Edward H. Flaherty Corp., 43-87 Vernon Blvd., Long Island City, N. Y., as exclusive distributor in the New York City area for its line of contractors' pumps.

Gorman-Rupp manufactures self-priming centrifugal, diaphragm, and solids-handling pumps for construction work.



**DIG
DEEP
DITCH
FASTER
WITH
PARSONS
TRENCHLINERS®**

- DIG 5'** — the Parsons 77 in not much wider than a yardstick, yet digs to 5' depths, 6" to 18" wide, at speeds to 21 fpm.
- DIG 10'** — the 155 can dig within 21" of side obstructions at depths to 10'. Cuts widths from 16" to 26" up to 25 fpm.
- DIG 12 1/2'** — if you need a ditch 16" to 42" wide at depths to 12 1/2', (60" wide with dual boom to 10'-0" deep) the Parsons 250 is the machine for you. Digs up to 25 fpm.
- DIG 19'** — Parsons 310 Trenchliner delivers ditch from 24" to 60" wide at depths to 19' (72" wide with dual boom 14'-0" deep). Thirty digging feeds give utmost efficiency in any ground.

PARSONS COMPANY

Newton, Iowa

See your distributor today or write for bulletin.

Please send information on Ladder Trenchliners.

Name _____
Company _____
Address _____
City _____ State _____

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A Division of
Company

it's a
**TURN
FOR THE
BETTER**

Full Time
**Sheppard
POWER
STEERING**
Trouble Free



Sheppard Power Steering is original equipment on many models of Brockway and Mack Trucks, Koehring Dumpsters, Allis-Chalmers Graders, Huber-Warco Maintainers, Champion Graders by Dominion Machinery, Fire Engines by American La France, Schield-Bantam Cranes and many others.

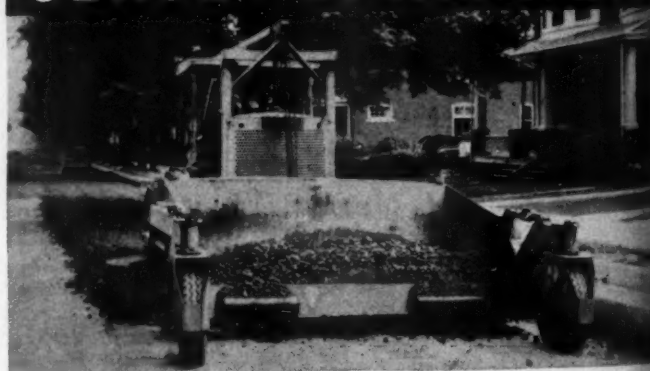
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**NOW...POWER STEERING
FOR YOUR CATERPILLAR
12 AND 112 GRADERS**

A Complete System Engineered for Easy, Fast Installation. Heavy-duty, full-time power steering puts operator in complete control of grader at all times... boosts work output. Simplified design... only 4 moving parts... assures quick, easy installation and maintenance-free performance.

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JERSEY SPREADER



...Gets the Job Done!

Whether it be on a major airbase, turnpike or city street, a Jersey Spreader gives low-cost, dependable performance... Big job or small, you always get your profit with a Jersey Spreader on the payroll. Fast and accurate, there's never a delay to hauling units. Models available to meet all requirements.



REG. TRADE MARK

Write now for complete information and illustrated literature.
TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER
HASBROUCK HEIGHTS, NEW JERSEY

38-34

For more facts, use Request Card at page 18 and circle No. 371

CONTRACTORS AND ENGINEERS

Universal Form Clamp names new dealer

Universal Form Clamp Co., Chicago, Ill., has appointed Southern Spanall, Inc., 1129 N.E. Seventh Ave., Fort Lauderdale, Fla., an exclusive distributor in that state for its complete line of Uni-Form panels and many other items used in concrete forming.

Harnischfeger appoints

The construction and mining division of Harnischfeger Corp., Milwaukee, Wis., has appointed Dalworth Machinery Co., 10301 Shady Trail, Dallas, Texas, a distributor for its P&H products in 68 counties in north-central Texas.

The new dealer will handle the complete line of P&H crawler and rubber-tire power cranes and shovels, plus P&H loaders and soil stabilizers.

Atlas Equipment Co., 1595 S. Second St., Salt Lake City, will handle P&H construction equipment in Utah, southeast Idaho, and southwest Wyoming.

Phillippi Equipment Co., 2360 Highway 100 South, Minneapolis, has been appointed a distributor for P&H construction equipment in the southern half of Minnesota.

Harnischfeger has named McCormick-Morgan Equipment Co., 324 Fifth St., San Francisco, dealer for its complete line of P&H crawler and rubber-tire power cranes and shovels in 24 California counties.

New dealers for P&H power cranes and shovels, soil stabilizers, and "El" loaders are A. E. Hickman Co., Ltd., St. John's, Newfoundland, Canada, and A. G. Webster & Woolgrowers, Ltd., Hobart, Tasmania, Australia.

New dealers for Parsons

The Parsons Co., division of Koehring Co., Newton, Iowa, has appointed three new distributors for its line of Trenchliners.

Critzer Machinery Co., 106 Sheldon Road, Berea, Ohio, will cover the northern third of that state.

Fleck Equipment Co., 1240 McCook Ave., Dayton, Ohio, will handle the southwestern sector of Ohio and three counties in Kentucky.

J. R. Panelli Equipment Co., Inc., 23750 W. 8 Mile Road, Southfield, Mich., will cover the eastern half of Michigan except for the Upper Peninsula.

M-W Equipment appoints

Jack Sardarian has been appointed parts manager and field service representative for the M-W Equipment Co., Hunting Park Ave. and Fox St., Philadelphia, Pa. Since 1957, he has been service manager for the company.

Bucyrus-Erie names dealers

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed several new distributors.

Telford Equipment Co., 319 E. North St., Lansing, Michigan, will handle the B-E line in Michigan's Lower Peninsula, with the exception

of 10 eastern counties that will be served by Telford Equipment Co. of Detroit, Inc., 10000 Freeland Ave., Detroit.

The Minnesota Division of Lake Shore, Inc., Iron Mountain, Mich., has been appointed a distributor for northeastern Minnesota.

Lake Shore will maintain parts centers at 1025 London Road, Duluth, and at Hibbing, Minn.

Caterpillar subsidiary formed in Switzerland

Caterpillar Tractor Co., Peoria, Ill., has formed Caterpillar Overseas S. A., a subsidiary company in Geneva, Switzerland.

The new subsidiary will take over

the sales and service of Caterpillar products primarily outside the Western Hemisphere. Australia and the United Kingdom, however, will continue to be covered by local Caterpillar companies.

Officers of the new subsidiary are: V. V. Grant, president; R. H. Defenbaugh, secretary-treasurer; J. R. Hawk, sales manager; and G. J. Preston, parts and service manager.

Richmond names

Frank G. Fearon has been named manufacturer's representative for Richmond Screw Anchor Co., Inc., Brooklyn, N. Y., in the company's Ohio, Indiana, and Michigan sales area.

A TRAVELIFT PIPE DREAM ... came true!



- It's actually happening in Milwaukee, Wisconsin! Laying 20 ton lengths of concrete pipe measuring 7 feet in diameter Travelift has speeded up production to an extent never before realized. Travelift replaces much more expensive and heavier equipment and because of its straddle design operator can see where pipe is laid.
- Laying pipe follows closely behind excavation, blocks no access roads along side of trench, Travelift also carries pipe from stockpile to placement in trench. Well distributed straddle arrangement prevents dangerous pressure on trench sheeting. The rubber tired Travelift travels on 1 beam tracks.
- A team of Travelifts here loads a barge with prestressed concrete beams, safely and efficiently, after handling them in the yard where this amazing vertical lift carrier performs many other duties such as removal of beams from forms for storage or loading on trucks for shipment.
- **ONE MAN OPERATES** the Travelift easily. Steering, and lifting are by hydraulics. Turning radius is short and maneuverability excellent.

TRAVELIFTS ALSO HANDLE
Freight containers, Missiles,
Piggy Back Trailers, Tanks,
Pipes, Wire Cloth, Boats,
Many other heavy materials.

Travelift

Write Department CE
STURGEON BAY, WISCONSIN

A DIVISION OF DROTT MANUFACTURING CORPORATION

For more facts, use Request Card at page 18 and circle No. 372

*Weight?
Measurements?
Age?*

STA-CRETE 15 —
8 pounds = 1 gallon
400 square feet = 1 gallon
AGE — UNLIMITED

STA-CRETE 15 —
UNADULTERATED
No Solvents — No Fillers

STA-CRETE 15 —
AN EPOXY
• that Bonds Concrete
• Waterproofs
• Resurfaces
• Decorates



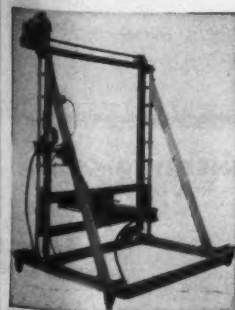
STA-CRETE Inc.,
115 New Montgomery,
San Francisco 5, California

Name _____
Address _____
City _____
State _____
Position _____
Company _____
Phone _____
P.S.

You're an Estimator * *
By accurately calculating the age,
weight and measurements of our gal —
a Sta 'N Play kit is yours.

For more facts, use coupon or circle No. 374

SINGLE STRAND



PRESTRESSING

MPS 1548 — Motorized Pretensioner

Capacity — 15 tons
Ram travel — 48 tons
Ram pull area — 10 sq. in.

Min. ht. (pull unit) — 14 1/2"
Max. vert. travel — 60"
Max. lat. travel — 50"

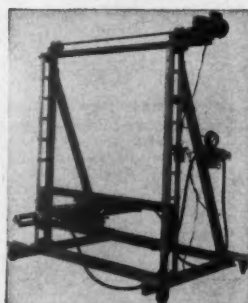
The Simms Motorized Pretensioner offers you big labor and time saving benefits, plus the precision accuracy you must have. Why not write today for full specifications on the MPS 1548? And when you write, ask for data on our line of pumps and center-hole rams, too.

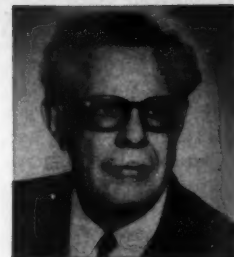
SIMMS ENGINEERING COMPANY

Dept. CE, 5301 W. Patterson Ave., Chicago 41, Ill.

For more facts, use Request Card at page 18 and circle No. 373

EQUIPMENT





Simple mechanics and methods engineering

Fully 85 per cent of construction work involves moving or transporting materials; only 15 per cent of the work calls for actual fabrication or changing the shape of materials. Because of this, construction supervisors who concentrate on reducing the number of transportations or the distances materials are moved can effect immediate cost reductions on a job.

The methods-engineering technique known as process charting involves a simple sign language made up of four symbols (Figure 1) that simplify the work of describing steps taken in the performance of work.

In laying brick, for instance, the actual fabrication work done by the mason involves placing bricks in position. Everything else—hauling and transporting the brick, building scaffolds, supplying mortar, etc.—is concerned with moving materials so that bricks can be placed. Similarly, the carpenter spends most of his time handling lumber—not sawing it or changing its shape or form.

Process charts

Charting such work as this is relatively easy when symbols are used denoting operation, transportation, storage, and inspection. The large circle is used to indicate work to be done or being done. This is generally work involving a change in the shape of materials rather than the trans-

portation of men, materials, or machines, or inspection work.

In the case of a brickmason, the only "do" operations are mixing the mortar and laying the brick.

A small circle indicates a transportation, which may involve the movement of men, materials, or machines

from one place to another. However, if materials are within reach of a workman, or within reach of a boom or other piece of equipment that will do the actual handling, they are considered part of an operation.

The triangle indicates a storage or delay.

The square denotes an inspection or approval for quality or quantity. These four symbols, which describe anything done or to be done on any particular job, are printed on the process chart (Figure 2). Samples of these charts may be obtained without charge from the National Schools of

100 TONS at 15' RADIUS

makes the BEST crane even BETTER!

Now, with the new Manitowoc Model 3900, you get a full 100-TON lifting capacity at a practical FIFTEEN FOOT RADIUS with plenty of reserve power and stability. This means the 3900, already recognized in the field as the TOP lifting crane in its class, will lift 33% more than it did before. Check these new advances and see why a Model 3900 crane can make more money for you.

INCREASED LOAD CAPACITY AT GREATER RADIUS — With a 60-ft. boom, the 100-ton maximum load can be lifted at a radius of 15 feet.

NEW "INVERTED ANGLE" BOOM IS LIGHTER, STRONGER — Made of a special new alloy, the new Model 3900 crane boom features tubular lacings welded to inner faces of the main chords for greater strength and longer life. Boom weight is reduced, yet strength and rigidity are increased. You can use longer booms—up to 170'—with higher capacities. Long reach tubular booms are also available.

SIMPLE BOOM INSERT CONNECTIONS with a single bolt at each joint permit fast in-the-field addition or removal of extra boom sections.

NEW 3-PIECE SELF-REMOVABLE COUNTERWEIGHT provides proper balance and ample stability. Carbody and rotating bed are matched to the demands of increased counterweighting and bigger work loads. As before, the counterweight is removed by the machine itself without the use of jacks, blocking or other cranes.

NEW "DYNAMIC LOAD CONTROL" DEVICE provides power lowering of full 100-ton load at lowering speeds comparable to hoisting speeds. The unit consists of a hydraulic retarder with heat exchanger, and a reversing mechanism with clutch and air controls. A chain drive interlocks main drum with the reversing mechanism which is located on the main drive shaft. The retarder, not the engine, absorbs load energy. Line speeds are controlled over a continuous range.

NEWLY ENGINEERED RETRACTABLE HIGH GANTRY reduces overhead clearance to a minimum when traveling. Gantry is quickly and easily raised or lowered by the boom hoist... no outside help is required.

NEW OUTSIDE POSITIONING OF CRAWLER DRIVE CHAIN permits crawler units to be removed for job-to-job transport without "breaking" drive chain or crawler pads. (Optional)

AUTOMATIC CLUTCH THROW-OUT LIMIT STOP for safe, close radius booming. This device automatically disengages boom hoist clutch when boom approaches a pre-set contact point... prevents operator from raising boom beyond safe limits. Also, physical-type pantograph boom stop is an additional safety feature.

INDEPENDENT BOOM HOIST IS STANDARD — has air controls to give the operator greater precision in handling boom and load. Operator has positive control at all times. Available on air-equipped machines only.

WIDE RANGE OF CONTROLS gives operating versatility. Available with air controls only, or manual controls only, or as a combination machine with both air and manual controls.

INDEPENDENT SWING is available as a useful feature for placing steel and "tight quarter" maneuvering. Allows operator to boom, swing, and travel simultaneously.

COMPACT DIMENSIONS for easier between-job shipment. The crane can be carried on standard railroad flat cars, within ordinary rail clearances... removing only crawler units, boom, and back hitch.

These new and improved features are only a small part of the complete 100-Ton Model 3900 crane story. To learn about the many other advantages you can enjoy, including full convertibility to dragline or clamshell, visit your nearby Manitowoc distributor soon.

ABC TUNNEL TUBING

MUCH BETTER THAN METAL VENT PIPE
because it's made of **NEOLON** NEOPRENE COATED NYLON

- Lower cost per foot.
- Can't tear—tough, wear-resistant—mildew proof—bright yellow for high visibility.
- Weighs only a fraction of metal pipe—will not rust or dent like metal pipe.
- One man can install—easy to hang and couple—takes only 3% storage area of metal pipe.
- Ideal for Mainline ventilation—brings air supply to working face. Lasts indefinitely.
- 8" to 36" diameter—all standard lengths. Also wire reinforced tubing for pulling out foul air.

Send for Catalog 109

AMERICAN BRATTICE CLOTH CORP.
WARSAW, INDIANA
233 ARGONNE ROAD

For more facts, circle No. 375

MANITOWOC ENGINEERING CORP. 1 K
Manitowoc, Wisconsin Dept. C&E
Gentlemen: I'd like more information on your new 100-Ton Model 3900 crane.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 376

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

CRANES
25 to 125 TONS

SHOVEL
1 1/4 to 6 YD

CONTRACTORS AND ENGINEERS



Operation

Transportation

Storage

Inspection

Figure 1.

Construction, Satsuma, Fla.

The making of a process chart starts at the top of the sheet under "Subject Charted" or "Operations." It is best, however, to avoid the latter term so that it cannot be confused with the term operation that is used as a symbol. The entry under "Subject Charted" describes the work to be done—for instance, the mixing of concrete. Below this on the chart is the "Process Description." Under this is entered each step in the work of mixing concrete. Every step must be entered on the chart, line by line. With this method, you break the work down into all the various steps to be taken. Opposite each step, a line is drawn to the symbol indicating whether this is an operation, transportation, storage/delay, or approval/

inspection. Farther to the left on the sheet are spaces to enter the time taken to perform each step and the distances things are moved.

In charting the job of mixing concrete, there may be as many as 15 or 20 steps to be taken before the work is finished. When the job is broken down into separate steps, it is possible to analyze the complete job from the chart.

In making a process chart, keep the process or subject to be charted as simple as possible. Confine it to one piece of work, which is reduced to its simplest terms. Do not chart the mixing, placing, and finishing of concrete all at one time. Break it down into components usually followed in estimating.

An analysis of a completed chart

should show up such things as unnecessary handling, excessive movement of materials, duplication of effort, man-hour inefficiencies, and excessive steps taken to do the work.

Purpose of the work

In analyzing a process chart, ask yourself some questions. Why is the work being done? Do the plans and specifications really require it? Has it merely been assumed that the operation is necessary? If we have control of the plans and specifications, can we redesign the job to eliminate this part of the work entirely? What would happen if all or any part of the work was not done?

If a particular operation cannot be eliminated, question yourself about cutting the time consumed for a particular job. Is every step in the process necessary? Can the number of operations be reduced? Which ones can be eliminated? Are we handling materials that the supplier or vendor would deliver to the place where they are to be used? Is delivery scheduling improperly set up?

If delivery schedules are resulting in excessive storage time, steps can be taken to have materials brought to the job when they are needed and not earlier. It is just as important not to have materials on hand until they are needed as it is to make sure that they do not arrive too late. Deliveries made far ahead of the time when materials are needed may intensify the rehandling problem and even require extra labor if they have to be protected from the weather. An ideal schedule has materials delivered so that they can be taken directly off the hauling unit and placed in final position.

Check on all charted delays or storages and ask yourself if all or part of them can be eliminated.

By analyzing every step in an operation, you will be able to eliminate

Compare these modern advantages of the newly-improved Model

3900

- Full 100-ton capacity at 15' radius.
- New boom construction using specially developed alloys.
- New three-piece removable counterweight.
- Power lowering with full 100-ton load.
- Newly-designed folding gantry.

MANITOWOC

ORP.

SHOVEL
4 to 6 YD

ENGINEERS

Manitowoc

Nashville Bridge Company uses a new 100-ton Model 3900 crane to place outside girders for new Interstate highway bridge construction in Nashville, Tenn.

FEBRUARY, 1961

WITH A
HAMMERBLOW . . .
3 SHARP RAPS
CUT WIRE ROPE
CLEAN . . . leave it
round, ready for splicing
or threading



Write for name of your
nearest stocking distributor

HAMMERBLOW
WIRE ROPE CUTTERS CO.

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For more facts, circle No. 377

(Continued from preceding page)

as many as possible, whether they be operations, transportations, delays/storages, or approvals/inspections. It should be obvious that as more steps are eliminated, the more efficient and cheaper an item of work becomes.

Time involved

When the number of steps needed to accomplish an operation is reduced to a minimum, examine the chart to determine the time needed to perform each step. Then try to find out if time can be trimmed from any step.

The charts can also be used to set up a proposed method of handling an operation. When this is done, try to determine beforehand if you have overestimated the time required for a certain step in the work.

If the chart is used to study work under way, in which case the box marked "Present" in the upper right-hand corner of the chart is checked, the chart will show the actual time required for each step of the work. This time can be checked against time originally estimated, or known by past experience, to be required by the work. Use of this method makes it possible to determine with accuracy the cause of high unit costs in the field.

Study moves

Whether you use the process chart to measure what is done for estimating purposes or as a check on work in the field, set down in the extreme left-hand column, under "Distance in feet," the distance items are moved. If distances are not measured accurately, a close approximation will suffice. This is a valuable part of the chart, for it is obvious that the shorter the distance things are moved the cheaper the work will be. This applies not only to moving materials by hand, truck, or conveyor, but also to the swing distance of booms on excavating and material-handling equipment.

Some questions that suggest themselves at this point are: Why move it at all? Would it be cheaper to move it a little later? Is it being moved the correct distance?

Detailed analysis of a process chart should give rise to more questions. One question that can be applied to all steps—operations, transportations, storages, and inspections—is whether or not someone else could do the work better or cheaper. This opens the path to other questions. Can cheaper labor be employed? Can changes be made so that a person with less training can be employed to do the work? Can we employ a more efficient machine for the job? Is it possible to further simplify the work? Can we combine this step in the work with another and reduce the cost? Can the sequence be changed so that we will be able to do it earlier or later in the process?

Where is the work done? Can it be done elsewhere more economically? Is it better to do it in the shop or in the field? Why do it at all? Why not sub it out? Can we purchase it pre-

Geo. E. Deatherage & Son, Inc. PROCESS CHART			
INDUSTRIAL ENGINEERS			
SUBJECT CHARTED		DATE	
OPERATION		CHART BY	
DEPARTMENT		CHART No.	
		SHEET No. OF	
DIST. IN FEET	TIME IN MINS.	CHART SYMBOLS	PROCESS DESCRIPTION
		○ ○ ▽ □	
		○ ○ ▽ □	
		○ ○ ▽ □	
		○ ○ ▽ □	

Figure 2.

Union Wire Rope

Super strong! Super tough! Gives you fullest measure of service



Mangled in a Wedge Socket

Here's a result of improper socketing. It was caused by using a poorly designed or worn-out wedge socket. Failure at the dead end can damage other sections of the rope, too.



Rusty Road to Ruin

Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. An insidious, silent type of killer, rust often does irreparable damage before it's even noticed. The one-strand break shown here resulted when the rope was allowed to become rust-bound through lack of lubrication. Tests show that, with other conditions ideal, properly lubricated rope has up to 10 times the life expectancy of dry rope.

Union Tuffy's on the job • Some of the popular types and uses



Tuffy Scraper Rope

Flexible enough to take sharp bends; stiff enough to resist looping and kinking when slack; highly resistant to the shock of load impact—that's Tuffy balanced construction. Mount a reel on your scraper—save wasting sound rope.



Tuffy Slings and Hoist Lines

Slings are a patented, 9-part machine-braided wire fabric that is next to impossible to knot or kink. Hoist lines have built-in strength, toughness, flexibility. Balanced—a top-performing team for handling every type of material. In addition to Tuffy, Union Wire Rope furnishes a complete line of slings.



Tuffy Dozer Rope

Mounts right on your dozer in a 150' reel. When rope shows wear, just feed through enough to replace the damaged part. Saves rope, gives you a bonus of extra service. Also available in 300' and 500' reels.

Union's Field Organization Will Help Select the exact rope you need from the Tuffy family of wire rope and slings tailored to special needs and from more than 1600 standard constructions. All have the balanced strength, toughness and flexibility that add up to long, trouble-free service. If your rope need is new, even more specialized, you are invited to bring your case to our research laboratory. That's the way many of today's special purpose constructions were developed. No obligation. Call your Union Distributor—listed in phone book Yellow Pages.

fabricated at a saving?

When is the work done? Would it be better to do it at another time? If we delay, is there a chance that it need not be done at all? Shall we wait for better weather conditions? Can we combine this work with another phase so that it will be cheaper? Does the timing fit in with material deliveries? Is it better to delay the work so that it can be done under cover?

How is the work done? Is it a hand job? Can we substitute machine methods for all or part of the work? Can we simplify the work or the design? Can more efficient machines be employed? Are we employing the most efficient workmen? Can another craft do it more economically? Can we develop a better plant layout?

Alternative methods

Once a process chart is made out and has been analyzed so that the work is reduced to its simplest terms, alternative means may suggest themselves. In this case, a process chart is made for an alternative method and put through the same analysis. This may be repeated several times if the importance of the job warrants the trouble. If process charts are able to save even the cost involved in making them, and secure you the best method of work, they will have proved worth while.

With charts of several possible alternative methods on hand, the one with the fewest steps or operations, transportations, storages and delays, and inspections and approvals would be deemed the cheapest.

Limitations

The simple process chart has its limitations. It does enable a person to make a preliminary work analysis so that unnecessary moves or steps in doing a job are eliminated. But it does not, without a great deal of difficulty, make it possible to measure each step in money if more than one man or machine is involved. With one man or machine involved in a step, and the hourly rate of the man known, or the operating cost of the equipment known, the cost of each step and an entire work process can be easily computed. But practically all work is performed by a gang or a crew of men or machines. Each craft and each machine may have a different hourly rate and be working on one phase of a job. To arrive at a

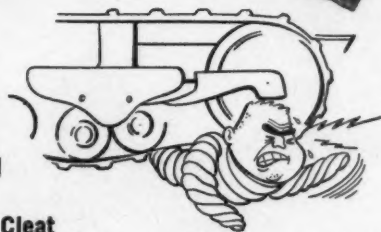
cost for the work would involve a compilation of a composite hourly rate for all the men and machines employed. This composite rate, when multiplied by the time taken for a particular step in an operation, could provide the cost for that step. The difficulty is that an hour later, part of the crew may still be engaged in the work under study, while part of the crew may have moved on to another phase of the work. This requires the compilation of another rate.

These practical difficulties are overcome by the use of a gang chart, which identifies each machine and each member of a crew by craft and rate. This chart is arranged so that the cost of each step in the process, as well as the total cost per unit, can be quickly and easily calculated.

(Next month's article will deal with "Methods Engineering and Gang Charts.")

peTuffy Tips

measure service life when properly used ... not abused ...



Crushed by a Tractor Cleat

The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope is no match for this kind of mistreatment.



After a Suicide Jump

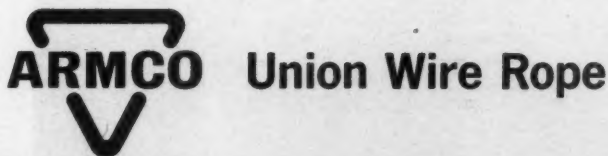
This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually, it was a case of sudden slack which threw the rope out of the sheave.

Union Wire Rope Handbook of TUFFY TIPS... Free!

The "Tuffy Tips" shown here are quoted right out of Union's handbook. In it there are dozens of other priceless hints on the correct use of wire rope. The common abuses and how to avoid them. How to save costly injuries. Maintenance tips. The proper fittings and how to apply them. Recommended sizes. Many other facts and suggestions that will cut down your rope costs and help you get out of wire rope the full service we build into it. No charge. Write Union Wire Rope, Armco Steel Corporation, 2260 Manchester Ave., Kansas City 26, Missouri.



1-61



For more facts, use Request Card at page 18 and circle No. 375

New branch headquarters for White Motor Co.

■ The White Motor Co., Cleveland, Ohio, is building new branch headquarters for White and Autocar trucks on Coolidge Ave., in Watertown, Mass.

The brick and concrete building will have 46 service stalls, a chassis dynamometer, two complete lubrication areas, and a wash area. It will also house offices, parts-storage and service facilities, and a machine shop. Worsham Construction, Inc., Denver, Colo., is the general contractor.

The new building will replace present headquarters in Boston.

Firestone promotes

■ The Firestone Tire & Rubber Co., Akron, Ohio, has named L. E. Perdue manager of the off-the-highway tire sales department. He has served as truck-tire sales representative at Akron since 1954 and has worked on major construction projects, including the St. Lawrence Seaway and the Niagara Power Project.

Building industry board headed by Rothschild

Robert Rothschild, president of Rothschild, Raffin & Weirick, general contractor of San Francisco, has been named chairman of the Building Industry Conference Board for 1961.

Vincent Raney, architect, is the new vice chairman of BICB, filling the position vacated by Rothschild.

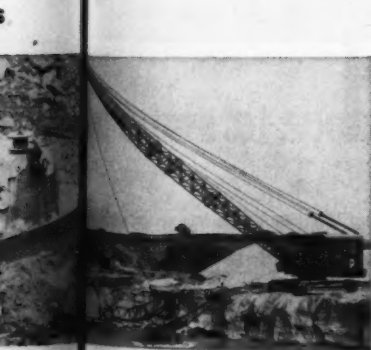
Symons sales meeting

■ Symons Clamp & Mfg. Co., Chicago, Ill., held its annual sales meeting last month in Des Plaines, Ill.

The conference, which was attended by nearly 200 salesmen, dealers, and other company personnel, consisted of lectures, demonstrations, and segmented workshops. Visitors were invited to tour the Chicago plant of the concrete-forming-equipment firm, as well as its form rental headquarters in Des Plaines.

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to 10 times



Tuffy Dragline Rope

It has abrasive resistance and su-
perior flexibility. Gives long service,
dependable action in handling
material—wet or dry dirt,
gravel, rock, minerals.
Runs smoothly on grooves—
even the drum when casting for
load.



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"The Look Ahead" here

Over 2,100 engineers, educators, scientists, and public officials gathered in Washington, D. C., last month to attend the 40th annual meeting of the Highway Research Board. The broad theme of the January 9-13 convention at the Sheraton-Park Hotel was "The Look Ahead." This theme was developed in more than 200 papers that reported the results of recent research in highway engineering, construction, financing, planning, traffic control, and administration. HRB is a unit of the division of engineering and industrial research of the National Academy of Sciences-National Research Council.

At the opening general session, Dr. Detlev W. Bronk, president of the NAS-NRC, called for a revival of the interest in science that was prevalent in Benjamin Franklin's day. More people need to realize, according to Dr. Bronk, that science can lead to greater understanding of the laws of nature. In the words of Francis Bacon he pleaded for "wisdom to deal with knowledge."

William A. Bugge, director of highways for the state of Washington, was elected chairman of the HRB for 1961. He is a past president of the American Association of State Highway Officials and is a vice president of the American Road Builders' Association. In the HRB top post, Bugge succeeds Pyke Johnson, a former president of the Automotive Safety Foundation.

More research needed

Outgoing chairman Johnson, in his annual report, called for a greatly expanded program of research in social, economic, and legal problems facing highway transportation. One new research project already approved by HRB, Johnson said, is a full investigation into the problem of de-icing of bridge structures.

"Little understood as yet by the driving public, but of deep concern to the highway builders," Johnson declared, "is the rapid accumulation of ice on bridges in all parts of the country. Divorced from the warm earth, these structures quickly become points of hazard to the motorist in times of cold weather. To protect

him, various materials are used that melt the ice but that tend to corrode the bridge. It will take concentrated effort to correct this fault, but once it is done millions will be saved in construction and maintenance costs."

Among other major problems that Johnson said needed vital study were: (1) the providing of all-weather surfaces for the millions of miles of lesser roads in the United States; (2) finding a way to improve the properties of native materials—the clays

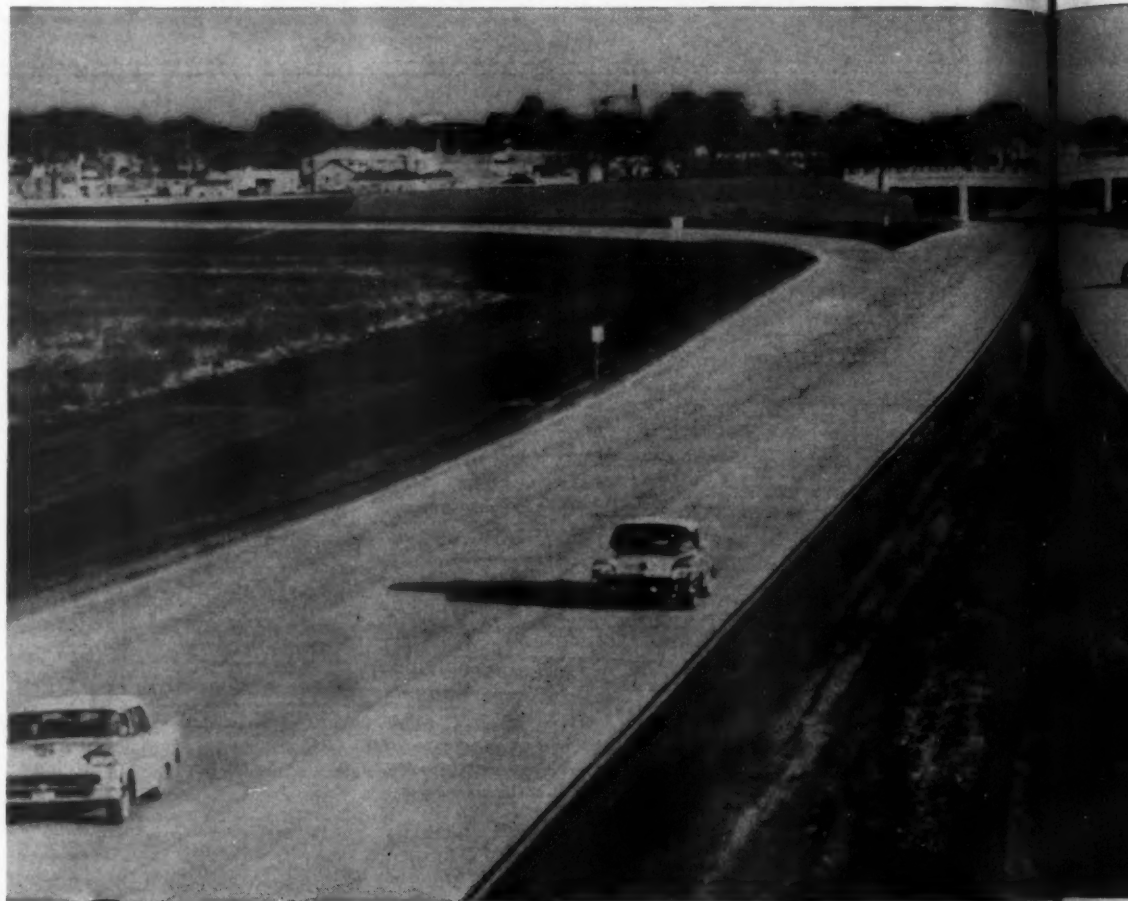
and shales—since the mineral aggregates necessary to build roads and the soils whose natural properties suit the requirements of road builders are becoming scarcer.

Keynote speaker

The keynote or theme of the meeting, "A look ahead in highway transportation," was struck at the opening general session by Dr. Lawrence R. Hafstad, vice president in charge of General Motors research laboratories.

In praising the versatility and adaptability of the conventional gasoline engine, Dr. Hafstad said he foresees no change in the power plants of cars during the next decade or two.

"The one big unknown is the smog situation," he conceded. "If and when a compact high-efficiency fuel cell is developed, its potentially smog-free characteristics may enable it to overcome what would otherwise be an insurmountable cost disadvantage." According to the GM researcher, the



Steel reinforced ...to stand under



Dr. L. R. Hafstad, vice president in charge of GM research laboratories.



PROJECT: Portion of Northland Expressway just west of Cook County, Illinois

OWNER: Cook County Department of Highways

CONTRACTORS: Arcole Mills Corp., Evanston, Illinois

WIRE FABRIC DISTRIBUTOR: E. W. Zimmerman, Inc., Chicago, Illinois



This mark tells you a product is made of modern, dependable Steel.

Theme of HRB meeting

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fuel cell
smog-free
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be an in-
tage." Dr.
rcher, the

present versions of fuel cells are much too bulky and heavy, as well as too expensive, for automobile use. So-called "air cars," Dr. Hafstad asserted, lack controls and are not suitable for today's complex traffic. These vehicles, which are supported by downward blasts of air, are likely to be used for special purposes only.

Research awards
The Highway Research Board Award for a technical paper of out-

standing merit was given to Kenneth A. Stonex, assistant director of General Motors proving grounds. His paper, "Roadside Design for Safety," was one of the more than 200 submitted to the board at its 1960 meeting.

It reports how ditches, slopes, trees, posts, and signs adjacent to the GM proving grounds were redesigned, landscaped, or removed to improve safety for test drivers. The award-winning paper suggested design standards for ditches and slopes, to

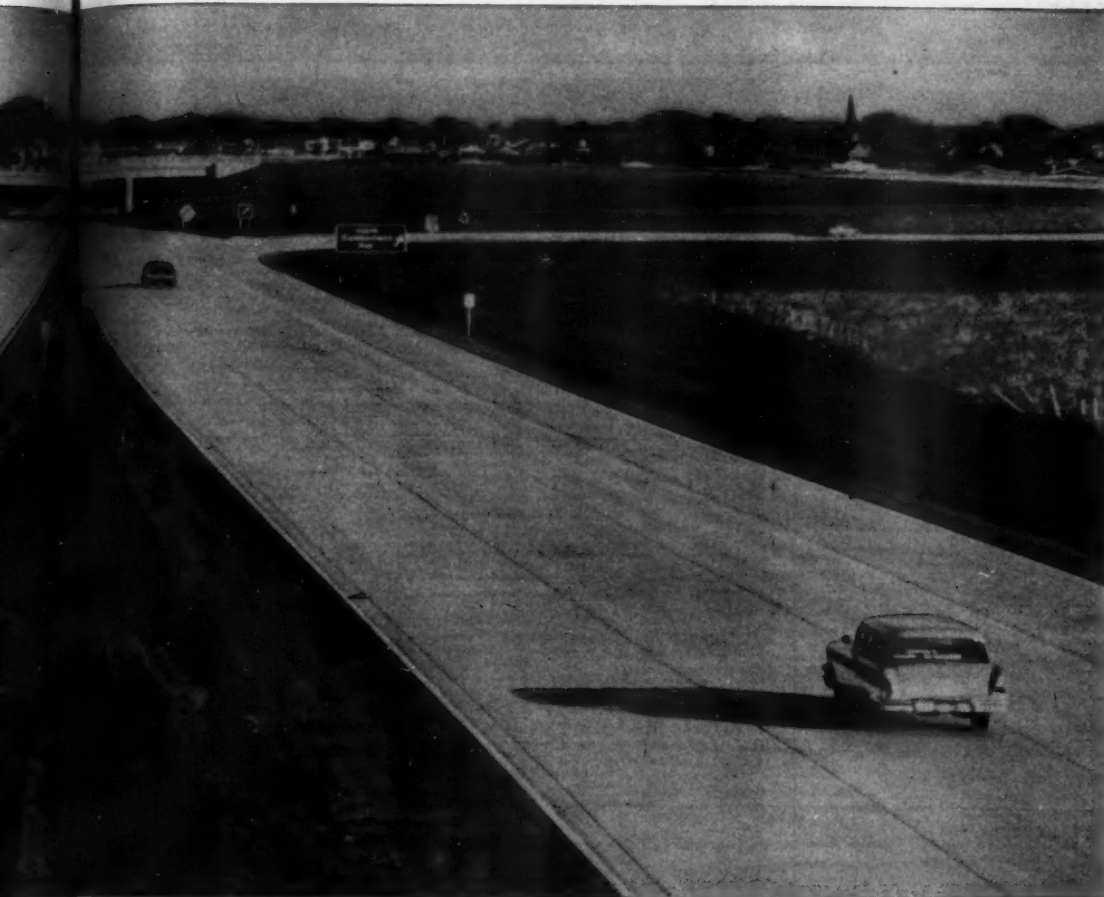
provide maximum stability for vehicles leaving the roadway, and also reported the results of extensive guardrail impact tests conducted by proving-ground engineers.

Newly elected HRB chairman William A. Bugge received the George S. Bartlett Award. The Roy W. Crum Award went to two researchers—Howard Allen of the U. S. Bureau of Public Roads and Robert R. Litchiser of the Ohio Department of Highways.

(Continued on page 129)



William A. Bugge, chairman, HRB, for 1961.



and under the hi-speed pounding of modern traffic

County, Illinois has opened the first section of new Northwest Expressway. And, like other expressways built under the authority and supervision of that county's Department of Highways, steel reinforced.

An anticipated daily count of 31,000 vehicles is expected on this newly opened 4½-mile section which extends from Foster & Central Avenues to Illinois Toll Highway. This figure indicates that this already busy strip will be subjected to as much traffic load gets heavier. And it points up the importance of building into all new roads and highways the strength it will take to stand up to the almost ceaseless pounding of modern speed traffic in the years ahead.

Highways reinforced with steel have a balanced

design in that all edges and corners are fully protected. USS American Welded Wire Fabric accomplishes distributed load transfer and reduces stresses about 30% which accounts for the truly superior performance of reinforced concrete over non-reinforced concrete. Reinforced pavements provide a safe, smooth riding surface that lasts.

USS American Welded Wire Fabric is today stronger than ever. Minimum tensile strength is now 75,000 psi and minimum yield point is now 60,000 psi. It has reserve strength for heavier pounding and it is available in a completely machine fabricated form, ready for immediate placement. For more information, write to American Steel & Wire, 614 Superior Avenue, N. W., Cleveland 13, Ohio.


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Division of
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Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

For more facts, use Request Card at page 13 and circle No. 379



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Says- TUCKER SNO-CAT CORP.

"We are proud to state that there are over 50 SNO-CATS satisfactorily operating in the Antarctic in temperatures as low as minus 60 degrees. This seems to us the ultimate in extreme tests for both SNO-CATS and LUBRIPLATE LOW-TEMP Lubricant on which SNO-CATS depend for their consistently outstanding and reliable performance."

J. M. Tucker, General Manager

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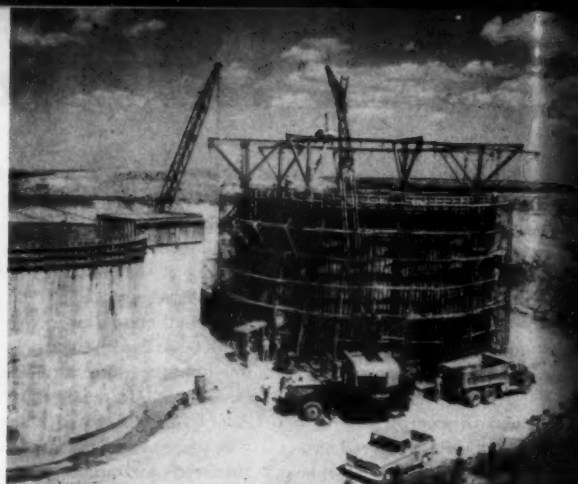
For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 380



Moving rock to make way for the new Ripley cutoff between Mount Sterling and Rushville, Ill., is this International TD-25. Freen Bros., Inc., Bluffs, Ill., contractor for grading and culvert work on the job, is moving some 300,000 cubic yards of earth and 55,000 cubic yards of rock.



The 700 tons of steel necessary for the reinforcement of one of the silos of the Shilling Missile Complex near Concordia, Kans., are being handled by Lorain 25-ton self-propelled crane, foreground, and a 35-ton Moto-Crane. The rigs are owned by the Todd Equipment Co., Houston, Texas.

NEW CMC

Wonder HORIZONTAL EARTH DRILL

Easy, fast, extremely low-cost way to drill holes under lawns, highways, streets, walks, etc. without trenching!



DRILLS HOLES
2" TO 12" IN DIAMETER
— UP TO 200 FT. IN LENGTH

CMC Wonder Earth Drill cuts through tough earth formations, tree roots — even soft sandstone. Takes only 30 seconds to drill a 2-inch hole, 5 feet. Drills holes up to 200 feet long with amazing accuracy. Plenty of power (Briggs & Stratton 5.75 H.P. 4-cycle engine) for drilling holes up to 12" in diameter. Easily set up and operated, one man can handle it.

A specially designed CMC $\frac{3}{4}$ " pressure pump is available to hook up to Wonder Drill to provide water pressure for flushing loose earth from drill bit area.

MEET AND BEAT COMPETITION EVERY TIME... get complete details on CMC Wonder Drill by MAILING COUPON TODAY!

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Rush catalog, prices on new CMC Wonder Earth Drill and CMC $\frac{3}{4}$ " Pressure Pump.

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Use **AMSCO MICRO MANG** for manganese build-up and repair. A 14% manganese rod that lets you weld manganese as easily as mild steel. Excellent for build-up work, too. High strength, superior crack resistance, easy handling, low spatter, easy slag removal. AC-DC, straight or reverse. Eliminates stainless for welding manganese to carbon steel.

Use **NEW AMSCO X-53** for all-purpose hardfacing. Composite rod excelling in deposition rate and usability with all known power sources and polarities. High impact and abrasion resistance. Easily outperforms other all-purpose hardfacing rods—composite or tubular.

Available in 50 lb. standard manual packages and 50 lb. semi-automatic coils.

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WHEREVER IMPACT AND
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Write us for "Pair for Wear" technical bulletin and/or test samples of rods



AMSCO

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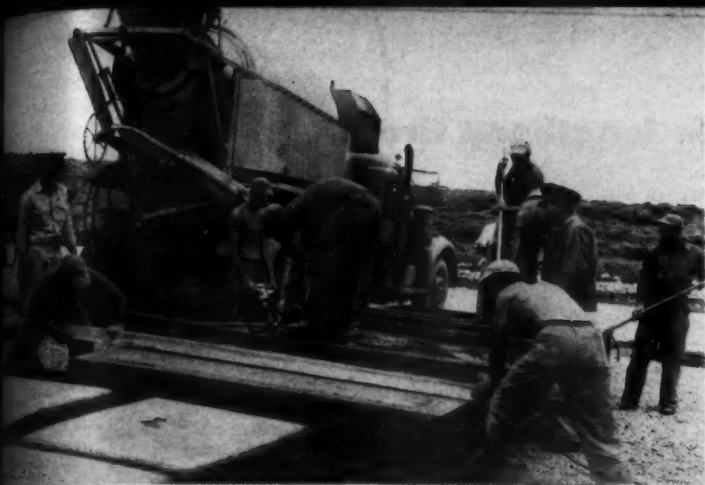
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Welding products distributed in Canada by Canadian Liquid Air Co., Ltd.

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CONTRACTORS AND ENGINEERS



Concrete is placed in a mold to make a roof panel for one of the buildings on the new \$3 million U. S. Marine Corps Air Facility being constructed by the Pacific Seabees at Futenma, Okinawa. More than 5,000 of these panels were used to cover some 65 buildings, constructed of precast concrete to combat rust and typhoon damage. A 52-foot,



30-ton precast bent for the commissioned officers' mess, above, is being hoisted into place. The entire facility will accommodate five Marine helicopter squadrons and the headquarters staff of Air Group Sixteen. It will serve 2,000 men and 300 officers.
Official U. S. Navy photographs.

(Continued from page 127)

A late addition to the HRB program was a film made by the Barrett Division of Allied Chemical illustrating the use of sprayed urethane foam as an insulating material on the underside of bridge decks. Its purpose is to prevent premature icing on bridge decks, thereby making such surfaces no more hazardous for drivers than road pavements. Other objectives are to cut down on the amount of de-icing salts that may be needed, and to reduce the number of freeze-thaw cycles through which bridge decks may pass in winter.

The urethane foam, when sprayed on to a 1-inch thickness, has a K value of 0.15-0.16 and weighs no more than 1/4 pound per square foot. The film indicated favorable results from use of the material in two recent experimental applications. One was on a bridge near Watertown, N. Y., where steel stringers carry a 7-inch reinforced-concrete deck overlaid

with a 2 1/2-inch course of bituminous concrete. The other bridge, at Clinton, N. J., has a 9-inch reinforced-concrete deck supported on prestressed girders. For comparison purposes, the foam was applied under one driving lane and the other was left uninsulated. In both experiments, the foam was sprayed on in September before cold weather set in. **THE END**

Calcium Chloride group promotes to new post

The Calcium Chloride Institute, Washington, D. C., has promoted H. Bobbitt Aikin and Harry A. Smith to the newly created position of senior regional engineer.

The two men will supervise field engineering, research, and other engineering and technical activities, and will plan national program.

Aikin will handle the eastern-southern region from headquarters in Washington. Smith will be in charge of the central-midwest region.

Col. Brill now president of new engineering firm

Col. Clinton B. F. Brill has assumed the presidency of Brill Engineering Corp., New York, N. Y. The new firm merges the interests of Col. Brill and Franklin Engineering Corp., formerly a wholly owned subsidiary of Burns & Roe, Inc., New York consulting and engineering firm.

Col. Brill served as chairman of the New York State Thruway Authority from 1957 to early 1960, and has directed a number of engineering projects throughout the country, particularly express highways. Formerly managing partner of the now-dissolved engineering firm of DeLeuw, Cather & Brill, he is completing, as sole proprietor, projects undertaken by that company.

Some \$231,250,000 of federal highway aid has been apportioned to the states. This is the balance of \$3,125,000,000 due for the fiscal year 1962.



Illustrated Engine Bearing Catalog

Now—20 page catalog of solid aluminum and steel-backed aluminum bearings for Caterpillar engines. Complete listings, easy-to-use.

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Attention CONTRACTORS



MECHANICS training

The Greer heavy equipment training shops provide highly practical instruction covering every step in maintenance and service of all types of current equipment. Training includes gasoline and diesel engine work and hydraulic systems. Students work on actual equipment in addition to classroom training.



OPERATORS training

Greer heavy equipment operator course graduates are ready to step into any job in the field. Practical classroom training on theory and operation is supplemented with hundreds of hours of operating every type of road building, earth moving and construction equipment.

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3 TIMES FASTER than ANY OTHER METHOD with

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Stock Sizes 1/4" to 6" diameters. Larger diameters up to 14" available on request.

Advanced, Free Cutting design for fast, low cost drilling in any masonry from hard brick and tile to hard concrete... even with reinforcing rods.

Better because:

1. Individual spiral flute for each cutting tip assures positive dust removal from the cutting zone.
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This tire blowout was caused by continued overinflation. Earthmover tires should be checked with a low-pressure gage showing 1-pound gradations.

Inspection program lengthens tire life

To prolong the life of the large tires used on modern earthmovers, the Construction Equipment Division of the International Harvester Co. suggests a daily tire inspection, with special attention given to the following points.

Inflation should be checked with a low-pressure gage, marked in 1-pound gradations, in the morning when tires are cool. If a tire is considerably underinflated, the vehicle should not be used until the cause of the air loss is found and repaired.

Underinflation causes rapid wear

on the outer edges of the tread and excessive flexing, resulting in the building up of internal heat and frequent blowouts. Continued underinflation results in radial cracks, while overinflation causes wear at the center of the tread and may lead to sidewall breaks.

If pressure builds up during the day, tires should not be bled, as the added pressure compensates for the additional heat by preventing sidewall flexing, which would generate more internal heat.

Tires should be inspected for cuts

that penetrate to the cord body. If not repaired immediately, these will spread quickly. Shallow cuts should be skived with a knife or bull-nosed rasp so that small stones do not become imbedded in the tire and work through the cords.

Rims and flanges should be checked



This tire is in a state of deterioration caused by oil or grease. To avoid such conditions, rim assemblies should be cleaned whenever tires are dismounted for repair, and vehicles should not be parked overnight on a greasy or oily spot.

272 JACKS & PULLERS / SIMPLEX

to choose from!

THE WORLD'S MOST COMPLETE LINE

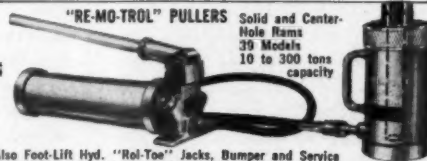
81 Hydraulic Jacks & Pullers



STANDARD HYDRAULIC JACKS
11 Models
1½ to 100 tons capacity
5¼" to 22" travel



"JENNY" CENTER-HOLE HYDRAULIC PULLERS
6 Models
30 to 100 tons capacity
3¼" to 10" travel



Also Foot-Lift Hyd. "Roll-Toe" Jacks, Bumper and Service Jacks, 2 & 3-Grip Pullers and Hand and Powered Pumps.

45 Lever Jacks

Also Pole-Pulling, Reel, Timber, Cable & Wire Tensioning, Pipe Pushing & Pulling, Tie Remover, Tie Replacer, and Siding & Flooring Jacks.



SINGLE ACTING RATCHET LOWERING
11 Models, 5 to 20 tons capacity.
Full capacity on toe or cap.



GEARED JACKS
3 Models, 25 to 35 tons capacity.
Side toe lift.



TRACK (TRIP) JACKS
13 Models (Five aluminum alloy)
Single and double acting.

146 Screw Jacks

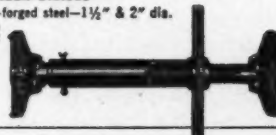


SCREW JACKS 4-WAY HEAD — 19 MODELS
10 to 24 tons capacity.
Ball bearing, Malleable Housing, Safety peep hole.



JOURNAL JACKS 8 MODELS
15 to 50 tons capacity.
Powerful, light, low height.

TRENCH & TIMBER BRACES
22 Models. Drop-forged steel—1½" & 2" dia. screws. Adapt to any width of trench.



Other screws types, Ratchet Head Planer and Reel Jacks: Push-Pull and Shoring Jacks; Steamboat Ratchets & Load Binders; Mine Roof and Timber Jacks, Rail Puller & Expander, and Gear & Wheel Pullers, Bumper Jacks.

For Complete Information write for:
Mechanical Jacks: Catalog Mech. 50 / Hydraulic Jacks: Catalog Hyd.

TEMPLETON, KENLY & CO.
2511 Gardner Road
Broadview, Ill.

For more facts, use Request Card at page 18 and circle No. 386

COMPETITORS HATE IT...



No Professional team would pass up an opportunity to sign a player who bats 1000. And no caisson contractor should be without a WILLIAMS digger! WHY?

BECAUSE a professional team demands outstanding performance of its players and WILLIAMS diggers are second to none in productive capacity.

BECAUSE a true pro must be consistent and the name WILLIAMS has become a synonym for dependability.

BECAUSE The versatility of a switch hitter is exemplified in the WILLIAMS digger capability to drill large and small diameter holes, vertical or battered, with augers or hard-rock bits, buckets or underreamers.

Why not "sign" a WILLIAMS digger for your team? The competitors may not like it... but the stockholders will.



Manufactured by
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JOSLYN MFG. & SUPPLY CO.
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for damage. If tires are dismounted for repair, rims should be cleaned and painted to make mounting easier and to prevent rust damage. All oil or grease found on rim assemblies should be removed as it causes quick deterioration of the rubber.

Caked mud and rocks should be removed from tires, particularly from rear-mounted duals.

Uneven tire wear should be located and corrected as soon as possible.

Mismatched tires on dual assemblies cause unequal load distribution, with the larger tire wearing rapidly, and the smaller tire scuffing severely. If it is necessary to use a slightly smaller tire, it should be placed on the inside position.

Haul roads that are well designed and kept in good condition may double or even triple haul speeds, lowering job costs and lengthening tire life. Shocks and impacts resulting in downtime are minor problems on smooth haul roads.

Tires and tubes stored under the wrong conditions can age more quickly than those in daily use. In storing tires, these steps should be taken:

1. Store in a cool, dry, dark area, protected from the wind. If there is no such area available, cover the tires with tarpaulin.
2. Tires should not be stored near

Factory Representative Wanted

An experienced salesman in the construction machinery field to take on Industrial Cab Company as an additional account. This position will require contacting tractor distributors in Eastern Canada, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, Ohio and other states, if possible, approximately twice a year.

INDUSTRIAL CAB COMPANY
36 Jefferson Avenue
Salem, Massachusetts

CONTRACTORS AND ENGINEERS

gasoline or lubricants. Even lubricant vapors can be absorbed by the rubber, with rapid deterioration resulting.

3. Pile the tires on a wood foundation to keep them off dirty or oily floors. Keep the same size tires together.

4. Protect tires stored outside with a waterproof covering. Water and oil must be kept from the inside of the tire casing; this can be accomplished by mounting the tires on a wheel, with air pressure reduced 50 per cent. The entire assembly should then be covered with tarpaulin.

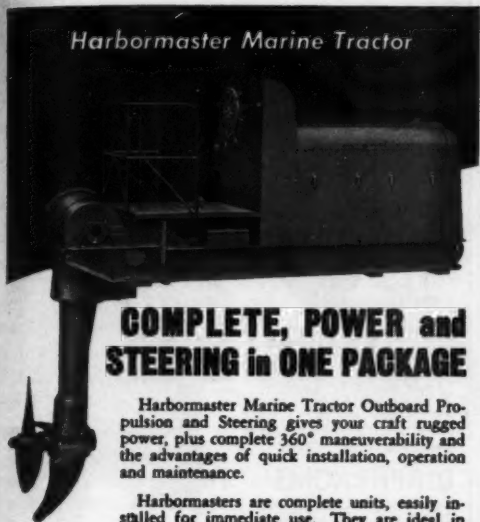
It is important to watch overloading. A 20 per cent overload drops expected tire life by 30 per cent. At 100 per cent overload, only 25 per cent of normal tire life can be expected.

THE END



THE LAST OF 5,500 LENGTHS of tubular steel supports have been removed from Trans World Airlines' new concrete terminal building at New York International Airport, which is supported by four buttresses. The next step is the erection of forms for the concrete floor. The building will be enclosed with a temporary wall material so that interior work can continue through the winter. The interior, free of supports, will have two floor levels. Designed by Eero Saarinen, the terminal is expected to be completed in late 1961.

Harbormaster Marine Tractor



COMPLETE, POWER and STEERING in ONE PACKAGE

Harbormaster Marine Tractor Outboard Propulsion and Steering gives your craft rugged power, plus complete 360° maneuverability and the advantages of quick installation, operation and maintenance.

Harbormasters are complete units, easily installed for immediate use. They are ideal in shallow or deep water... for coastwise service as well as in harbors, lakes, canals, and rivers. Available with direct or remote controls.

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Compression plates, properly spaced teeth, precision-made bolts and nuts assure...

tremendous holding power at the vital point!

Positive gripping action on both sides of belt...through naturally... distribute pull or tension evenly across joint... reduce maintenance headaches.

NEW "25-PAK"



Available in Steel, Monel, Stainless, Everdur Also Promal top plates.

Order from your distributor, or write to us for Bulletin F-112.

"25-PAK" contains enough fasteners to join common belt widths.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4608 LEXINGTON STREET, CHICAGO 44, ILLINOIS

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FEBRUARY, 1961

Throgs Neck Bridge open to traffic

■ The \$92 million Throgs Neck Bridge, which crosses New York City's East River at the head of Long Island Sound, connecting the boroughs of the Bronx and Queens, was opened to traffic January 11.

The suspension bridge is designed to siphon off some of the heavy traffic on the Bronx-Whitestone and Triborough bridges, and will open an additional gateway between Long Island and expressways leading to New England, upstate New York, New Jersey, and points south and west. Three lanes of traffic will be able to move in either direction across the 1,800-foot center span, which rises 142 feet above the river.

On the Bronx side, the new connection will initially cause further congestion. The complex interchange circle at Bruckner Boulevard and the Hutchinson River Parkway, to be replaced under a federal and state program, is not scheduled for completion for five years. The direct link to the New England Thruway is due to be completed in June.

The Throgs Neck system is the first of three projects in a \$776 million plan to provide highway relief for metropolitan New York and New Jersey. The other two are the second deck of the George Washington Bridge and the Verrazano-Narrows Bridge between Brooklyn and Staten Island.

Foreign distribution expanded by Dorsey

■ Dorsey Trailers, Inc., Elba, Ala., a subsidiary of the Dorsey Corp., has entered into an agreement with International Division, U. S. Industries, Inc., New York, N. Y., whereby the USI division will distribute Dorsey trailers through its offices and dealer network in all foreign countries except Canada and the western European Common Market.

Dorsey's present sales organization will continue to serve the United States and Canada, while western Europe will be handled by Dorsey Europe, a Swiss corporation recently set up by the Dorsey; Waggonfabrik Talbot of Germany; and establishments Arbel of France.

A POWER PACKED PROFIT PRODUCER! SPEICHER'S tandem traction TRENCHER

The only heavy duty trencher on rubber tired wheels • Will turn in 26' radius—without shoe and casing in 24' radius

goes where the jobs are... near or far. Quick, easy mobility lets you handle small jobs as profitably as big projects. Highway speeds up to 30 miles per hour... no time lost loading on a semi.

This is the trencher with the big bite... big power... speed and accuracy... easy, low cost maintenance and longer life. The best quality investment you can make. Write us today for an illustrated brochure with all the details. No obligation, of course... we let the facts sell Speicher Tandems.

FULL WIDTH SHOE MAKES SMOOTH BOTTOM

Sand tight and reinforced to prevent cave-in. Overlap construction of bottom makes perfectly smooth trench. And only Speicher gives you vertical shoe post alignment adjustment... one of many exclusive features.

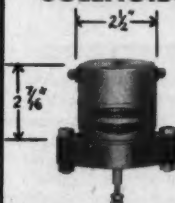


Write, phone or wire: **ANCHOR SALES CORPORATION**
1109 Shimp Drive, Celina, Ohio

For more facts, use Request Card at page 18 and circle No. 390

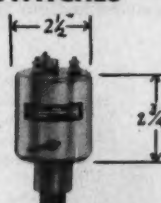
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HEAVY DUTY D.C. SOLENOIDS



These solenoids are ruggedly constructed, having a life expectancy of over 2,000,000 operations at a rated capacity of 10 lbs. pull. They are available with 1/2, 1 and 1 1/2 inch stroke.

SPEED SENSITIVE SWITCHES



An extensive line of speed sensitive switches, with various mountings and drives to suit the needs. One or more snap switches contained in a single unit can be furnished to trip at any given speed with an adjustable range for each.

SYNCHRO-START PRODUCTS, INC.
8151 N. RIDGEWAY AVE., SKOKIE, ILL.

For more facts, use Request Card at page 18 and circle No. 391

Avoid legal pitfalls

Liability for negligence "borrowed" of employee

THE PROBLEM: A general contractor exclusively controlled operation of a crane on a building job. But an electrical contractor lent a crane operator to the general contractor as a courtesy and the general contractor reimbursed the electrical contractor for wages paid to the operator. An employee of the general contractor was injured through alleged negligent operation of the crane by the borrowed operator. Was the electrical contractor liable in damages to the injured man?

THE ANSWER: No. (*Gundich v. Emerson-Comstock Co., Inc.*, 184 N.E. 2d 512, decided by the Illinois Appellate Court, First District, Third Division.)

The court cited a decision by the Illinois Supreme Court to the effect that where the general employer of a lent employee has no control over him while he serves the borrower, the mere fact that the man remains on the general employer's payroll does not make the general employer responsible for the man's negligence.

Claim for extra work was disallowed

THE PROBLEM: Excavation on a municipal street job disclosed need for better support for the road base, due to an unstable underground condition. Without modification of the written contract, the municipal engineer and inspector authorized the contractor to increase the depth of excavation 2½ or 3 feet and to substitute 2½ inches stone for originally contemplated fill. The contract required municipal board approval of changed work and supplement agreement for extra work and increased pay. The contractors' sued for \$5,877.35 for the extra work. A statute forbade the municipality to contract for work involving more than \$2,500

without calling for competitive bids. Did the contractor's failure to secure extra orders or a supplemental agreement from the board preclude enforcement of a claim for extra pay?

THE ANSWER: Yes. (*Home Owners Construction Co. v. Borough of Glen Rock*, 158 Atl. 2d 197, decided by the New Jersey Superior Court, Appellate Division.) The court reasoned:

Provisions in public contracts to the effect that no payments shall be made for quantities in excess of estimated quantities stated in the proposal until extra orders have been issued, and that contractors shall do no work and furnish no materials in

For Better Highway Turf Maintenance...

ENGINEERS INSIST ON FIELD-PROVEN Ryan EQUIPMENT



Engineers responsible for maintenance of right-of-ways, median strips, boulevards, parkways and other large grass areas insist on proved equipment that will do the job fast, efficiently, and without costly breakdowns.

They choose the RYAN RENOVATOR to aerate turf damaged by winter-kill, erosion, and over-compaction. This ruggedly constructed renovator opens thousands of small holes in the soil to permit water, air, and fertilizer to reach the root zone. This cultivating action ensures maximum water penetration, encourages deep root growth and, consequently, prevents soil erosion.

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Accepted low bid cannot be withdrawn

THE PROBLEM: A municipal housing authority invited bids on condition that the low bidder execute and deliver a contract on written notice given the bidder within 30 days after opening of the bids. Bids were opened about 2 p.m. April 22, and the low bidder, being notified that its bid had been accepted, telegraphed acceptance of the proposed contract. The telegram was sent between 2 p.m. and 3 p.m., May 22, but shortly thereafter the bidder attempted, by another telegram, to withdraw the acceptance. Was the acceptance binding?

THE ANSWER: Yes. (*Housing Authority of town of Lake Arthur v. T. Miller and Sons*, 120 So. 2d 494, decided by the Louisiana Supreme Court.)

The court said that the low bidder had until sundown May 22 to accept the contract. But, having signified acceptance in the first telegram, it could not be withdrawable by the second wire.

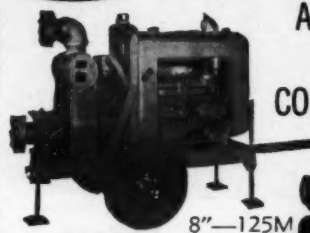
Records are evidence of amount due supplier

THE PROBLEM: A subcontractor on building construction had been billed weekly for labor and material supplied by plaintiff for use on the particular job, and there was no dispute as to the amount due. The subcontractor sent plaintiff a check for a lesser amount, bearing on the back a typed statement, just above the place for endorsement, to the effect that cashing of the check should acknowledge full payment of the sum due. Did cashing of the check prevent enforcement of claim for payment of the balance actually due?

THE ANSWER: No. (*Eastover Company, Inc. v. All Metal Fabricators, Inc.*, 158 Atl. 2d 89, decided by the Maryland Court of Appeals.)

The court ruled that records kept by plaintiff, showing the cost of labor and material furnished for the particular building, number of hours worked, lists of materials furnished, and plaintiff's charges therefor, formed legal evidence as to the amount actually due.

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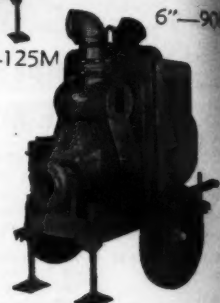


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CONTRACTORS AND ENGINEERS

excess of quantities stated in the proposal prior to issuance of extra orders, and that in the event contractor is called upon to furnish materials or perform extra work, contractor and municipality must enter into a supplementary agreement, are for the express purpose of safeguarding the municipality against excessive expenditures. A contractor cannot collect for extra material or extra work in the absence of a showing of fraud, unless there is a supplementary agreement.

Lien claim is voided by nonlienable item

THE PROBLEM: A contractor sued to foreclose a lien for work and materials furnished in constructing a

sewage treatment plant. The statutory notice of lien claims, aggregating \$30,568.93, included a nonlienable claim for \$72 for labor not used on the project. Was the entire lien claim invalidated?

THE ANSWER: Yes. (Wiggins v. Southwood Park Corp., 350 Pac. 2d 436, decided by the Oregon Supreme Court.)

The court adhered to its previous declarations that inclusion in a lien notice of an unsegregated nonlienable item renders the lien claim wholly unenforceable. However, the court decided that the circumstances were such that the contractor had an unsecured claim for additional cost involved in the placement of steel that had been required by changed plans.

Contractor responsible for warning signs

THE PROBLEM: A state highway repaired by a contractor intersected another highway, and because of the lack of a warning sign, two automobiles collided at the intersection. Was the contractor liable for injury to a passenger riding in one of the

automobiles?

THE ANSWER: Yes. (Evans v. Patterson, 112 S. E. 2d 194, decided by the Alabama Supreme Court.) Points decided:

The contractor was not exempt from liability because the state itself was exempt from suit for negligence on its part in the construction or repair of highways.

It was proper to consider the fact that the contract required the contractor to maintain proper warning signs.

The contractor was not exempt from liability because the repair work had been completed and travel on both roads was open, but there had been no formal acceptance of the repair work by the state highway department.

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

City's liability for contractor's neglect

THE PROBLEM: A city awarded a repaving contract under state aid. The contract involved resetting curbs. Lack of lights, warning signs, and barricades created a dangerous situation for pedestrians. The city's inspectors knew of the situation but did nothing to correct it. Was the city liable for resulting injury to a pedestrian on a theory that it created a nuisance?

THE ANSWER: Yes. (Bechefskey v. City of Newark, 158 Atl. 2d 214, decided by the New Jersey Superior Court, Appellate Division.)

The court said that if a municipality permits public use of a street during construction, it cannot avoid liability for excavations or other defects resulting from the work merely because the work is being done by an independent contractor. The municipality is liable where the independent contractor has been negligent or has created a nuisance.

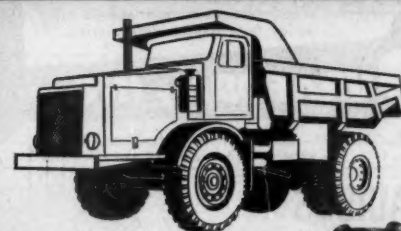
Signers, beware!

THE PROBLEM: A construction corporation applied to an insurance company to furnish a performance bond on which the latter became surety. The application was signed in the name of construction corporation by its president, whose signature as such officer appeared. Below that signature were his individual signature and that of another officer, who was also a director and stockholder. The application recited that applicants bound themselves jointly to indemnify the insurance company against liability on the bond. In attached statement applicants set forth their individual financial resources as well as those of their corporation. The bond was issued with the insurance company as surety. That company later sued the construction company and the two individual signers for \$50,000 indemnity on account of a payment that the surety company had to make to a beneficiary of the bond. Could the signers escape individual liability on the ground that their signatures covered only their official capacities?

(Continued on next page)



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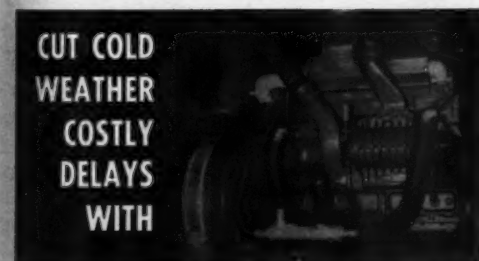


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FEBRUARY, 1961

avoid legal pitfalls

(Continued from preceding page)

THE ANSWER: No. (Columbia Casualty Co. v. Bern-El Construction Corp., 196 N.Y. Supp. 2d 905, decided by the New York Supreme Court, New York County.) The court said that there was no showing that the surety company had deceived the individual defendants as to the nature or effects of the application. The fact that they furnished a statement of their individual financial resources showed that the surety company looked to them as well as to their company for indemnity against liability.

Limitation of cost affects contract

THE PROBLEM: Were architects conditionally entitled to payment for services in designing a proposed town fire-police station, where the lowest bid for construction was \$81,555 and the town board had appropriated only \$79,000 for the project?

THE ANSWER: Yes. (Tallman v. Town of Marion, 184 N.E. 2d 159, decided by the Massachusetts Supreme Judicial Court.)

The written contract, employing the architects, on a standard American Institute of Architects form, did not mention any limitation on the estimated cost of construction, but the architects knew that the appropriation was limited to \$79,000. On

failure of the town and architects to agree on a revision of the plans to bring the construction cost within \$79,000, another firm of architects was employed, and the first firm sued for a court ruling on their rights. The trial judge upheld the town's claim that plaintiffs were not entitled to collect. But the Supreme Judicial Court ordered a rehearing of the case. The court said that because the written contract of employment did not mention a construction cost limit, plaintiffs could not be regarded as having broken that agreement. But plaintiffs could not collect if, before the written contract was signed, it was mutually understood by oral agreement, that the town was to be bound only if construction bids within the appropriation limit

were received. This held true, even though the written contract was silent on the point.

Computation of penalty for delayed completion

THE PROBLEM: A store building contract called for a \$100 penalty for each day's delay in completion after a certain date. There was 67 days delay, but 47 days was caused by the owner's failure to remove an adjacent house, which the contractor had been told would be removed so that the lot could be used as access to the construction site. Further delay was caused by change orders made by the owner's architect. The contractor sued for an unpaid balance due under the contract. Did the trial court properly decide that the owner was entitled to offset only 20 days' penalty?

THE ANSWER: Yes. (Semas v. Bergmann, 3 Cal. Rptr. 277, decided by the California District Court of Appeal, First District.)

The 20 days' delay was not excused because of inclement weather, which the contractor must have provided for as a risk.

Bond coverage on federal projects

THE PROBLEM: A prime contract called for grading, asphalt paving, and concrete paving of a federal airport. The contractor sublet the asphalt paving, and the subcontractor employed plaintiff to do necessary supervisory and testing work. Could the plaintiff receive benefits under a bond given by the prime contractor under the Miller Act for payment of work that had been done on the project?

THE ANSWER: No. (Elmer v. United States Fidelity & Guaranty Co., 273 Fed. 2d 89, decided by the United States Court of Appeals, Fifth Circuit, upholding a decision by the United States District Court for the Southern District of Mississippi, 174 Fed. Supp. 437.)

The plaintiff could not be regarded as a "subcontractor" on the project in such sense as to be a beneficiary of the prime contractor's bond.

Replacing defective work

THE PROBLEM: Ordinarily, when construction does not conform to contract requirements, the owner's claim against the contractor is limited to the cost of repairing the defects. But where paying for the work so defective that it had to be wholly replaced, was the owner entitled to reimbursement for the expense of removing it, as well as the cost of replacing according to the contract specifications?

THE ANSWER: Yes. (Engle v. Hardouin, 119 So. 2d 510, decided by the Louisiana Court of Appeals.)

A contrary rule applies only when the contractor's deficient performance proves to be partially beneficial to the owner.

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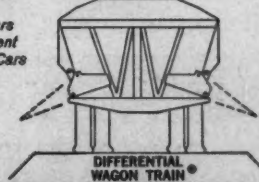
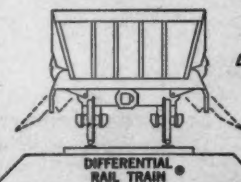
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Four Westerners receive annual Beaver awards

Four prominent leaders in the West's heavy-construction industry recently received the 1961 Golden Beaver Awards in recognition of their outstanding careers. The presentations were made by Paul Grafe, president of the Beavers, an association of dam builders, heavy constructors, and suppliers, at the Annual Beavers' Awards banquet in Los Angeles in January.

T. E. Connolly received the trophy for distinguished management. He is head of T. E. Connolly, Inc., San Francisco, an organization whose achievements include 26 tunnels totaling about 26 miles in length, including the tunnel through Yerba



T. E. Connolly, president of T. E. Connolly, Inc., was awarded the 1961 Golden Beaver Award for management.

Buena Island in San Francisco Bay; a hydraulic fill dam, involving 11 million cubic yards of excavation and embankment; and rock jetties along half the coast line of California.

David E. Root, former vice president of Guy F. Atkinson Co., South San Francisco, was awarded the trophy for achievement in supervision. During his years with the company, he was engaged in such proj-

ects as the excavation for Bonneville Dam Locks and Powerhouse, Treasure Island's exposition building, and Hansen and Mud Mountain Dams. In 1941, he became general manager at the Roosevelt Naval Base. He supervised all Atkinson activities in southern California until he retired in 1959.

George T. McCoy, retired, California state highway engineer, received

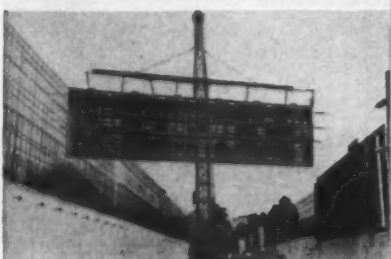
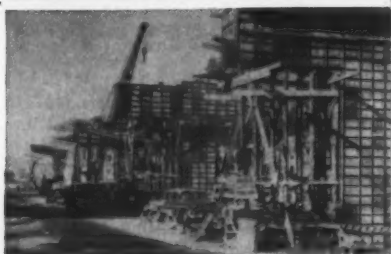


George T. McCoy, retired California state highway engineer, received the annual Golden Beaver Award for engineering achievement.

the award for engineering achievement. During his 16-year administration, he was in charge of the activities of the California Division of Highways, which created 2,300 miles of multilane divided highways involving expenditures of \$2.5 billion. In 1958, the American Association of State Highway officials presented McCoy with the Thomas H. MacDonald Memorial Award for outstanding service in highway engineering.



David E. Root, retired vice president of Guy F. Atkinson Co., received the Golden Beaver Award for achievement in supervision.



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"Products from the Gold Tool Room"



John L. Savage, retired consulting engineer, was awarded the 1961 Golden Beaver trophy for special honors.

John L. Savage, retired consulting engineer, received the trophy for special honors. With the U. S. Bureau of Reclamation from 1916 to 1945, he became chief designing engineer in charge of all civil, electrical, and mechanical design. His major projects included such notable western dams as Hoover and Grand Coulee. Specializing in dams and power plants, he served as consulting engineer to the governments of countries all over the world.

Short welding courses for key personnel

■ The Hobart Technical School, Troy, Ohio, will hold five intensive courses, each five days in length, during early 1961. The courses are designed to improve the ability of key personnel to direct, control, and evaluate fusion welding operations.

Registration for each course is \$10 per person. Reservations may be made with the School Director, Hobart Bros. Technical School, Troy, Ohio. For more detailed information, write for the Short Course Bulletin, Winter-Spring 1961.

U. S. Rubber appoints

■ Dr. Clide I. Carr and Harry E. Witt have been appointed department heads in synthetic-fiber and plastics research at the U. S. Rubber Co. Research Center in Wayne, N. J.

Carr, who will manage the synthetic-fiber research department, has been with the company since 1954 doing research on resins, high-temperature-resistant polymers, and synthetic fibers.

Witt, manager of the plastics research department, joined the company in the same year and has worked primarily with natural-rubber latex, battery separators, synthetic rubber, heat and impact-resistant plastics, and polymerization.

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